FEBRUARY 26, 1951

STEEL

The Weekly Magazine of Metalworking

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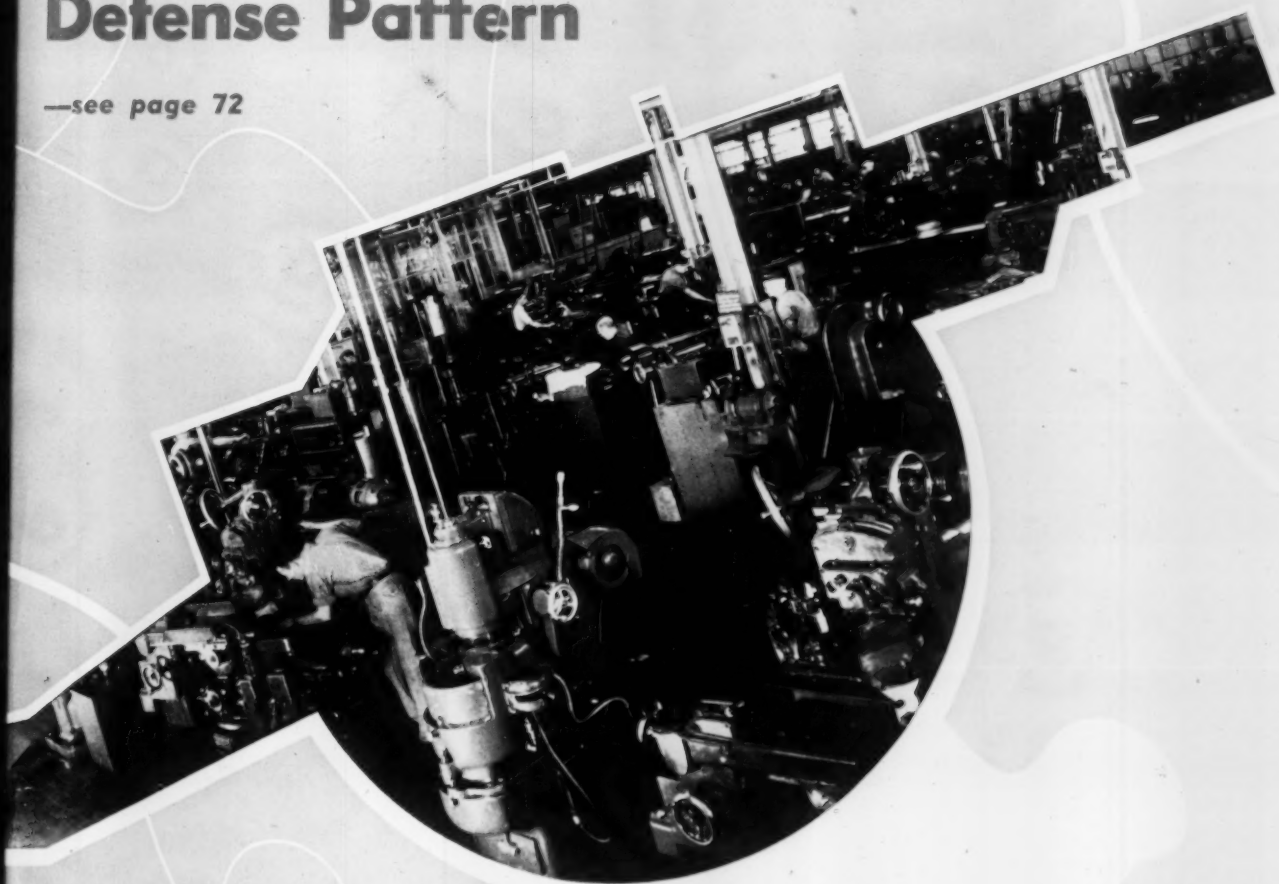
Fit Your Tools TO THE Defense Pattern

—see page 72

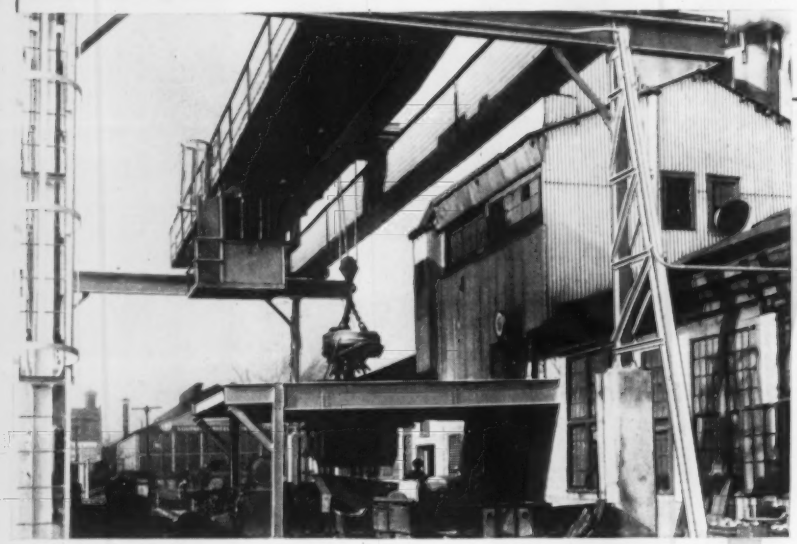


Who's Who in the Defense Organization, p. 54

Eye Safety: Man-Hour, Dollar Stakes Are High, p. 77

U.S. Exports Hold Despite Shortages, p. 53

WHEN BUYING MAGNET CRANES SPECIFY EC&M CONTROL AND MAGNETS



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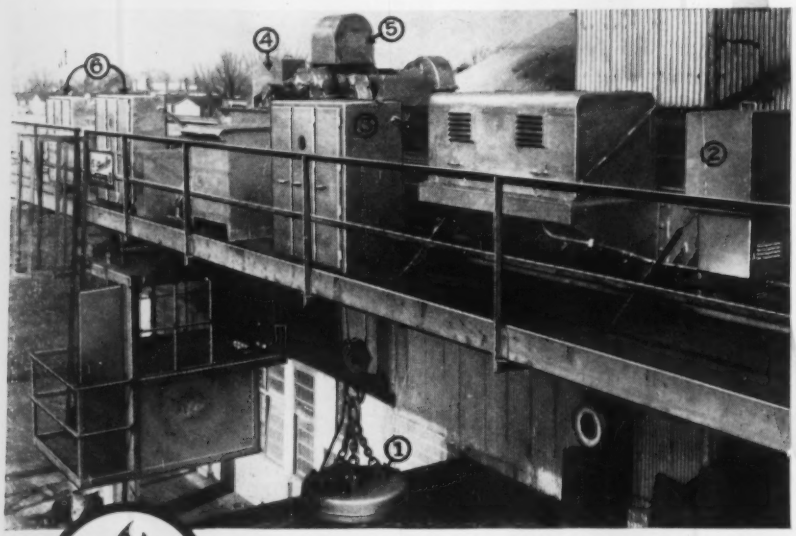

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STEEL
The Weekly Magazine of Metalworking

VOL. 128 NO. 9 FEBRUARY 26, 1951

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Next Week **... Nonferrous Metals — How Much Expansion? ... 15,000,000 Stampings per Grind on Carbide Dies ... Aluminum Aircraft Parts Hot-Formed Successfully ... Silicones Can Mean More Production, Less Maintenance**

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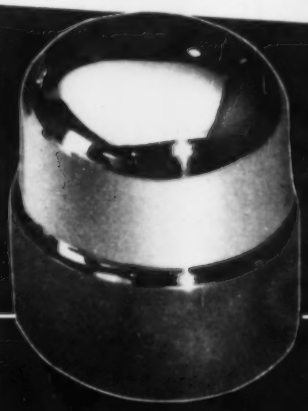

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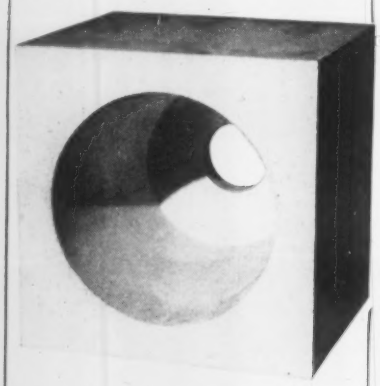

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Behind the Scenes . . .

Unsolicited

STEEL has arrived. Evidently some writers' magazine has listed us as being in the market for material from free-lance correspondents. We have been deluged in the past month or so by all kinds of unsolicited material, practically none of which the editors are able to use.

Most of it merely rehashes news articles already presented by our editors in Cleveland, Washington, New York, Pittsburgh, Detroit, Chicago and London, England. Or it trods ground already covered by our editorial correspondents in Birmingham; Buffalo; Cincinnati; St. Louis; Youngstown; Los Angeles; San Francisco; Seattle; Dallas; Toronto, Canada; Birmingham, England; Paris, France; Liege, Belgium; Dusseldorf, Germany; and other cities. Most of our correspondents work on a yearly retainer basis and are on the staffs of daily newspapers in their areas.

Eloquent Silence

Winter vacationists in Florida are madly buying oil heaters to keep warm this season, we are told in a publicity release from a housewares firm.

Fourteen words were all that were necessary to tell us and you the fact about oil heaters in Florida, but the publicity outfit that wrote the release used 151. If all the words in publicity releases that are not used by editors were laid end to end. . . . well, Shrdlu, you're writing too much yourself. Profit by the example of the Florida Chamber of Commerce which had nothing whatever to say about the oil heater situation in the state.

No Trouble at All

We are in receipt of this letter which we reprint in its entirety: "I have seen one of your magazines on steel. Since I am going to be a metallurgist I thought if you could, you might send me some information on metal. If this costs any money I will pay it. Thank you very much."

Man of the Year

Take a look at the Lincoln Electric Co. ad on page 52 and you'll see one reason why Lincoln Vice President A. F. (Chas) Davis was named industrial ad man of 1950 by Copy Chasers, a feature in *Industrial Marketing*.

Copy Chasers likes the editorial approach that Chas Davis gets in the Lincoln ads. The department points out that editors use a technique that may be effectively copied by copy writers in some instances. Editors hold their jobs because they know what the reader wants and needs. Copy Chasers asks: "Why not watch the editors and try to find out how they would present our information if they had it?" Many Lincoln ads are actually illustrated articles on construction of factories, machine tool production and many other subjects.

Sweetheart

Well, it's happened at last. Voted by Local 731 as garbage collectors' sweetheart of 1951 is Helen Olsen. The Excavators & Scavengers Union at Chicago named her the girl they would most like to "collect." A picture of the fortunate Miss Olsen shows her standing in a garbage pail. Very fetching.

Mail Carrier

A quarter-century of commercial air mail service was marked ten days ago. It was on Feb. 15, 1926, that a Ford trimotor airplane flew mail from Detroit to Cleveland in 55 minutes (with a good tailwind). Ford Motor Co. was awarded the first mail contract, and operations between Cleveland, Detroit and Chicago later were taken over by the old Stout Air Lines, headed by inventor William B. Stout. An old ticket stub from Stout Air lines, in the possession of Associate Editor Art Allen, reads: "This receipt is to be retained by you as a reminder of your flight in a Ford-Stout all-metal plane. Keep boosting aviation."

Puzzle Corner

The railway strike so fouled up the mailings of the Feb. 12 issue of STEEL that no one has had a chance to pair the military ranks with the officers in the problem of that date. So, we're going to give you another week to figure that one out. Also, try this one:

One hundred people are employed in a plant. They are paid at the end of each day, the men receiving $5, the women $1 and the boys 5 cents. The daily payroll is $100. How many men, women and boys are employed?

Shrdlu

Metalworking Outlook—Page 35

The Metalworking Outlook

Labor Looks for Greener Fields

Labor-Truman accord may never be completely repaired because the three Administration members of the Wage Stabilization Board voted with industry representatives for a formula that would limit pay boosts to 10 per cent of base wages as of Jan. 15, 1950. Economic Stabilizer Eric Johnston may patch up the formula enough to calm the unions down for the time being, but big labor is already looking for new alignments. Talk of a third, labor, party is the loudest in years. Threats of widespread strikes are being made with reckless abandon.

Auto Cutbacks: Mild Reaction

Auto makers will go ahead with 1952 models despite the cutback orders (p. 48). They're too far along on plans to stop now. Auto, appliance and other hard goods makers are already pretty well resigned to cutbacks which will be spelled out specifically in an NPA order soon. They'll get 20 per cent less steel in the second quarter than they used on the average in the first two of 1950. In the third quarter they'll have to cut back their use of steel by 30 per cent. NPA will cut back the use of copper for consumer durable goods in the second quarter by 25 per cent from the same base period. The March copper cut was only 20 per cent.

Small Business Defense Plight Aired

Congress is genuinely alarmed by complaints from small business that it's getting frozen out of defense ordering now that more than 90 per cent of all defense contracts are negotiated, not advertised. Watch for action by the legislators to allot money for daily or at least regular listing of federal contracts which will be negotiated.

Price Controls: New Start by Midyear?

The whole price control system may be scrapped and a fresh start made by midyear. Present controls haven't been effective thus far. The price regulators have been following World War II guides, but the current part war and part peace economy is a country mile from World War circumstances and new procedures have to be evolved. One possibility: More price controls will be tied to Bureau of Labor Statistics' consumers' price index. Significantly, BLS is now working feverishly to revise the standard.

Rail Rate Fight Mounts

The whole price program would strain even more at the seams if Interstate Commerce Commission grants the railroads' re-

Production-Engineering News—p. 71 *The Market Outlook—p. 119*

quest for a 6 per cent freight rate increase. ICC is being subjected to unprecedented pressure both pro and con on the matter.

Bond Drives Again

Watch for government defense bond drives in industrial plants that will parallel World War II campaigns in intensity. Two motives will spur the action: The Treasury needs the money since taxes will not cover the soaring budget; the U. S. wants to skim off the cash accruing in bonds maturing from World War II to relieve further inflationary pressures. Some $1.5 billion in savings bonds mature in 1951, $3.9 billion in 1952, $6.6 billion in 1953 and a peak of $8.3 billion in 1954.

Industry Seeks Investors

Look for better dividend rates and more intense stock-selling campaigns from now on to lure the cautious investor. Huge industrial expansion in the next few years will have to be financed with outside help—industry hopes without government aid. So, industry and the government will be competing for those defense bond dollars and personal savings of the private individual. In 1951 personal savings may reach $15 billion, compared with $12 billion in 1950 and $8.6 billion in 1949.

Headway on the Seaway

The St. Lawrence Seaway proposal may get Congressional approval at last. The railroads are about the only recalcitrant opponents left. But even if approved, the $800 million project won't help Midwest steel mills get Labrador and other foreign ores for five or six years, the length of time it would take to build.

Grist from Washington

NPA will soon take steps to assure adequate materials supplies for tool and die makers. . . . Expect cutbacks in civilian uses of anti-friction bearings . . . Under emergency conditions, at least 5 million additional persons could be added to the total labor force—including the armed forces—but a large-scale expansion of the armed forces to 12 million would reduce the number of civilian workers by about 5 million.

Goings-on In Industry

A pooling arrangement expected to go into effect Apr. 1 should help machine tool deliveries (p. 43) . . . You'll have to do a selling job on the government to get defense contracts (p. 44) . . . Dissatisfaction is growing over maladministration of the fast amortization provision of the 1950 Revenue Act (p. 45) . . . Porcelain enamelers hope that half their capacity will still be used for civilian output despite defense (p. 46) . . . Steelmakers will need 5 to 7 million more tons of scrap if they are to boost ingot output to 120 million tons by 1952 (p. 46) . . . Schedules for alloy steel production will be tailored to fit the supply of alloying elements (p. 48) . . . Congress is in no hurry to pass a basing point bill now that we're in a sellers' market (p. 50) . . . U. S. exports may reach nearly $11 billion in 1951 despite mobilization (p.53).

Be Fair and Firm

Every American has a stake in the outcome of the battle being waged by union labor chieftains for greater power in formulating defense mobilization policy. To date President Truman has stood staunchly behind Defense Mobilization Director Charles E. Wilson in spite of terrific pressure from unions.

Resentment has been brewing in union camps for months. Men like William Green and Philip Murray had become so accustomed to having their views considered favorably in the White House that they took it for granted they would sit in dominant positions in the defense set-up. When months passed and the union heads discovered they were not leading the parade in the customary manner, they began to protest. They were offended when Arthur Flemming was named manpower chief. They had demanded that Secretary of Labor Maurice Tobin be given that job.

Another sore point developed during discussion of a wage formula by the Wage Stabilization Board. Industry members favored a wage ceiling 8 per cent above the level of Jan. 15, 1950. Union members favored a ceiling 12 per cent above that level. After long debate the six industry and public members agreed upon a 10 per cent ceiling. The three union members not only refused to accept this, but they also withdrew from the board. Last week Stabilization Director Eric Johnston was withholding approval of the board's 10 per cent formula pending further discussions with the ex-union members. Mr. Wilson was ready to accept a top-flight union adviser on his staff.

Here is a delicate situation demanding fairness and firmness. Most constructive elements in the nation would like to see President Truman and Mobilizer Wilson accord the union leaders fair treatment. At the same time, they will applaud enthusiastically whatever show of firmness is required to prevent the unions from winning advantages in power and wage formula beyond their just deserts.

The present dispute affords as good a time as any to deflate the ego of some union chieftains to reasonable bounds. Too long they have been throwing their weight around in Washington with little regard to the interests of others.

E. L. Shaner

EDITOR-IN-CHIEF

YOU HAVE TO SEEK IT: Currently the problem of how to get in on war work is troubling many metalworking companies of small and medium size. They fear that restrictions will force them to curtail peacetime production long before they can obtain war contracts or subcontracts.

On many conferences and clinics conducted on

this problem, company executives seeking war work are offered all sorts of advice. Most is good but much has limited application. Judging from recent clinics, one bit of advice from which many companies can profit is this:

Don't sit back waiting for somebody to ask you to take on war work. If you want it or need it, go after it. Be prepared to show what you have in equipment, personnel and experience to do a specific type of work. If you have marked achievements to your credit and do a good selling job, your chances for success are pretty good. —pp. 44, 72

* * *

POSSIBLE, IMPROBABLE: Some slight hope remains among steelmakers in Britain that the 80 major iron and steel companies that were taken over by the government on Feb. 15 may be denationalized. The reasoning of the die-hards is that the Labor government will go slow in introducing any drastic changes in the operation of the iron and steel facilities in the immediate future. Meanwhile, the Conservatives in the House of Commons will take advantage of every opportunity to put through a motion of censure on some issue that may result in defeat for the Laborites. Winston Churchill's fifth attempt to unseat Attlee, based upon censure of the ill-fated peanut venture, failed by only 7 votes. A victory for Churchill at any time in the next few months—considered possible but not probable—could reinstate private ownership of steel. —p. 53

LOTS OF PREWAR CARS: Motordom is not too much concerned about National Production Authority's 20 per cent cutback in use of steel for automobiles after Apr. 1 because this reduction is no more than the industry has been expecting right along. However, spokesmen for motordom are quick to resent any implication from Washington that automobiles are unessential. Recently when Michael DiSalle, price stabilization director, was quoted as saying "I can't get too excited about automobiles. They are in pretty good shape. . . . I don't think you'll find many people driving 1932 cars right now," the president of the National Automobile Dealers Association had a prompt answer. He said that in 1949 there were 1,738,000 cars of 1932 or older manufacture being driven. Today 67 per cent of the cars on the road are prewar models. For millions of essential workers, the automobile is indispensable as a means of getting to and from the job. —p. 57

* * *

DON'T SELL U. S. SHORT: Sometimes when our nation's terrific blunders are uppermost in our minds, we suffer a terrific let-down in spirit. Many of us felt pretty low when the switchmen's strike was on the verge of paralyzing industrial activity. In due time the "sick" men returned to work. Production shops recalled their employees. In an incredibly short time, industry resumed normal activity.

This publication's index of industrial production dropped from 220 to 197 during several weeks of the strike. In the week ended Feb. 17, recovery from strike-bound conditions boosted the index to 217. This uplift of 20 points in a single week is impressive evidence of the tremendous recuperative powers of our free economy. Probably our system is so potent that it can absorb an alarming amount of blundering and incompetence. We can indulge in the folly of inexcusable waste and destruction and yet recoup the loss in a spectacularly short time. —p. 61

* * *

INDUSTRY CO-OPERATES: A feature of a new boiler plant at the National Works of National Tube Co. at McKeesport, Pa., is elaborate equipment for controlling smoke. The boilers are fired with blast furnace gas, with pulverized coal as an auxiliary fuel. When gas is used it is cleaned by two gas washers and two electrostatic precipitators. When coal is used, dust collectors designed to meet the new Allegheny county smoke control ordinance are used to reduce the volume of fly ash escaping from boiler stacks.

This type of co-operation with local authorities by industry is becoming the order of the day in many metropolitan areas. Los Angeles, St. Louis, Pittsburgh, Cleveland and other cities are making steady progress in combatting air pollution. H. G. Dyktor, commissioner of Cleveland's control program, says it has taken 32 per cent of the dust and soot out of the air in five years. Throughout the nation, industry is spending $400 million a year to reduce air pollution. —p. 84

Brighter Outlook For Machine Tools

NPA is considering a pooling arrangement that may go into effect in about a month. It will quicken deliveries and may extend some priorities to nondefense work

EXPECT improved deliveries after Apr. 1 on new machine tools for defense production. By late spring, shipment prospects even for some unrated tool orders now in the backlog may be brighter because the industry is dickering for extension of priorities to some of its nondefense work.

A pooling arrangement for defense tool orders is being considered by National Production Authority and is expected to go into effect in about five weeks or earlier. The proposal (see STEEL, Feb. 12, p. 48) calls for a common pool for defense and defense-support tool orders. The government would underwrite production schedules and govern distribution of the output, with the help of the industry.

The orders would be accompanied by priority ratings to enable builders to obtain materials and components.

Fingers Crossed—Builders are skeptical about the effectiveness of the pool priorities, but hope for the best. Most machine tool makers have priority rated orders now, but the DOs are of limited help. That's because tools are made in lots. In one lot of 50, perhaps only two tools have DO orders which can be extended to get the materials and components for those two only. But the whole lot may be held up because components are missing for the other 48. It's not economically sound to build most tools singly or just two or three at a time.

That's why the industry needs blanket priority assistance on materials to be able to extend DOs for foreign and essential civilian tools that may be in a lot with armament machines, points out Frederick S. Blackall Jr., president and treasurer of Taft-Peirce Mfg. Co. It's hoped that National Production Authority will approve an order similar to E1B used during World War II. That blanket regulation would permit the tool manufacturer to extend priorities to get materials for perhaps 25 or 30 per cent of his output that's not strictly for defense. The blanket proposal, if approved by NPA, would probably go into effect after the pool setup is organized.

A Big Help—The pool and blanket proposals would go a long way, the industry thinks, in helping it to double its present production, an objective being considered in Washington. Few builders believe they need to expand capacity much to meet the goal. They are hampered chiefly by materials shortages.

The materials scarcity dropped the January National Machine Tool Builders' Association shipment index to 113.9, from 135.7 in December. Yet the order index rose from 410.1 in December to 478.8 in January. Currently, machine tool delivery waits of 15 to 18 months are common. Many defense plants need new machine tools before they can start on armament output.

Nothing Easy — Virtually everything that goes into a machine tool is now hard to get. The gas shortage occasioned by the cold weather and the rail strike forced six to eight-week delays in castings deliveries. Steel shipments are even worse. Although the industry consumes less than 0.2 per cent of the total steel produced, it uses a great variety of steel products, a factor contributing to its procurement troubles.

In the tool-up for defense, the machine tool industry gains an importance surprising for its size. Only about 280 companies make machine tools, and many of those are small operators. The industry employs less than 50,000 wage earners, fewer than the number of employees in many single plants of General Electric Co. "Because of our size," one builder points out, "Washington sometimes doesn't understand the role we play

Postwar Peak of 7 Million in Metals Industry

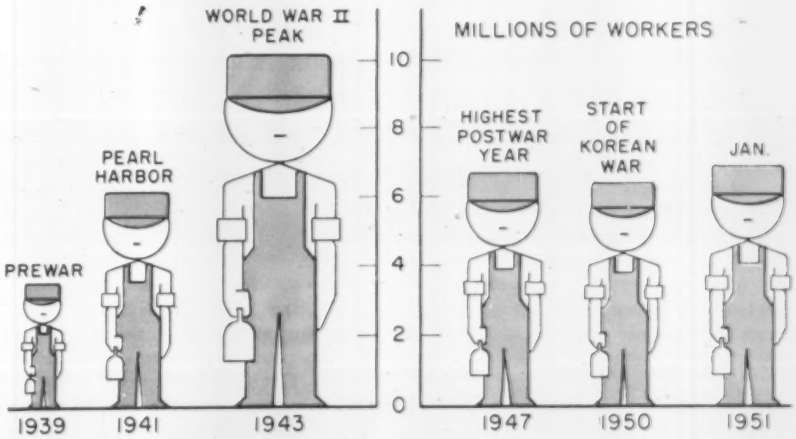
NO WONDER the "help wanted" section of newspaper classified pages is mushrooming. Employment in metalworking plants rose in mid-February to a postwar peak of 7 million, the Labor Department's Bureau of Labor Statistics reports.

Metalworking plants in January employed 900,000 more workers than in December, 1941, but substantially fewer than the World War II peak of over 10 million (see the chart). The metalworking gains were made in January despite a seasonal decline in nonfarm employment to 45.2 million, down 1.4 million from December.

Up and Up—Since the outbreak of the Korean war, employment in primary metal and metal products plants has risen by nearly 700,000, reflecting both the boom in civilian hard goods output and the stepped-up defense production program. From December to January, metalworking plants gained only 20,000 workers, probably a temporary slowing down in the overall rate of employment expansion in those facilities.

In a few segments of metalworking, employment actually declined

Employment in Metalworking Again on the Upswing



Source: U. S. Department of Labor, Bureau of Labor Statistics. Figures include employment in ordnance, primary metals, fabricated metal products, machinery, electrical machinery, transportation equipment, instruments and miscellaneous manufacturing industries

from December to January. Electrical machinery makers lost 20,000, chiefly because of declines in production of radio and television sets. Machinery and transportation segments of metalworking showed the best employment gains in the month.

Seasonal Shift — The December-January reduction of 1.4 million in nonfarm employees resulted mainly from seasonal employment declines in retail trade, federal government and construction and allied activities. Total manufacturing employment, at 15.7 million in January, remained about the same over the month, but was 1.7 million higher than in January, 1950.

Steelworkers Hold Jobs Longer

Turnover of workers in the steel industry in 1950 decreased more rapidly than in manufacturing as a whole. U. S. Bureau of Labor Statistics show the rate to be only half of the average of 92 industries studied and lower than the relationship prevailing in 1946-1949.

High stability of employment at blast furnaces, steel works and rolling mills in the first eight months of 1950 is indicated by the separation rate of only 1.6 for each 100 employees, compared with 3.1 terminations for each 100 workers in all manufacturing.

Steel Wages, Employment Soar

Average hourly wage payments and the total payroll of iron and steel companies rose to new highs in 1950, says American Iron & Steel Institute.

The hourly payments to wage earners averaged $1.746 for the entire year, four cents more than in 1949 and more than twice as much as in 1940. In December the hourly wage payments jumped to an average of $1.96, an increase of 23 cents over the hourly average payments for the first 11 months. That increase is partly due to year-end adjustments in vacation pay allowances.

The total payroll of the industry in 1950 was an estimated $2.4 billion, an increase of $330 million from 1949 and $160 million over the previous record set in 1948.

Employment in the industry reached 657,000 in December, the highest on record except one month in wartime 1942. Wage earners worked an average of 39 hours a week in 1950.

Bendix Labor Force Rises

Bendix Aviation Corp. has increased employment 40 per cent since the start of the Korean war.

Wide World

READY FOR WORK: George M. Harrison, right, AFL vice president, talks to his new boss, Eric Johnston, after being sworn in as special assistant to the economic stabilizer

Labor Department Makes Shifts

Battle between the defense organization and the Labor Department for a voice in the defense manpower decisions still goes on although Maurice Tobin's forces are thus far on the losing end.

Their latest action is to establish a new division of industrial services in the Bureau of Employment Security. The new division will seek to improve "utilization of defense and essential civilian manpower," the same task newly appointed aides of Defense Boss C. E. Wilson have. Donald P. Lallemant of Fairmont, W. Va., heads the new division.

The Labor Department has also appointed Mrs. Mary Norton, formerly a member of Congress from New Jersey, as a womanpower consultant.

Valve Division To Quadruple

Engineering personnel and departmental facilities of Minneapolis-Honeywell Regulator Co.'s Valve Division at Philadelphia are undergoing a 400 per cent expansion. The program includes research into and development of new industrial valve designs.

To Meet Need for Engineers

The University of Pittsburgh plans a regular 12-week summer semester, from June 18 through September 7, 1951, for students in the schools of Engineering and Mines. Prof. Howard E. Dyche, acting dean, says the sharp increase in demand for engineers from both civilian and military quarters makes it desirable for students in both schools to attend.

Wanted: Subcontracts

Industry advised to do "selling" job as cutbacks spur interest in defense work

WANT defense contracts? You'll have to do a selling job. The armed services are unlikely to drop them in your lap.

This was the advice given more than 1000 industrialists trying to find out how to land defense work at a subcontracting clinic sponsored by Case Institute of Technology in Cleveland Feb. 20. The advice is the consensus of prime contractors, successful subcontractors and government procurement agency representatives.

Many Items, Many Suppliers—Government agencies will buy some 3.5 million different items. They may come from as many as 240,000 companies. Under these conditions it is impossible for the buyer to seek out the supplier. Obtaining a contract, prime or sub, is primarily a selling problem.

Many more companies will obtain subcontracts than prime contracts. Prime contractors are farming out up to 70 per cent of the value of their contracts. Many small and medium companies are preferring subcontracts to primes.

How To Get a Subcontract—The Case clinic developed these tips for companies seeking subcontracts:

1. Analyze your company to determine what you can best produce. Is your regular commercial product, with minor modifications, adaptable to the defense effort? Or must you make an entirely different product?

2. Prepare a selling document to give prime contractors information on your facilities, personnel, management, work-space, the products you are making or can make, the tolerances to which you can work, financial and credit rating, and your capacity to make deliveries on schedule.

3. Select your prospects. Study awards of prime contracts. A weekly synopsis of awards of unclassified contracts is available at field offices of the Department of Commerce and many co-operating offices, such as chambers of commerce, banks, industrial associations. Selected awards holding subcontracting possibilities appear on page 48 of this issue. Others will be published weekly in STEEL.

4. Sell yourself to the prime contractor. This will involve convincing him that your shop and your management can meet his requirements. Probably, the prime contractor will send a field engineer to inspect your facilities. Help him make a complete investigation of equipment, manage-

ment methods and labor. Demonstrate your claims on precision. Be prepared to change layouts, methods and production control if necessary.

Convert Your Sales Force—Many companies will use their sales forces to line up subcontracts. The approach will be from the standpoint of performing operations rather than selling commodities. This may require additional training of salesmen in manufacturing or the collaboration of production men.

In many cases, leads will be found among the companies with whom you are now doing business. Canvass your customers and suppliers.

District procurement offices of the armed services may be able to help you get lined up with prime contractors. List your facilities with them.

Local and regional commerce and industry associations often serve as a clearing house for facilities. Tell them what you have and what you can do.

Suggestion: Get Defense Work

Many metalworking plants will find the going increasingly rough unless they can get into defense work.

That's the view expressed by STEEL's editor-in-chief, E. L. Shaner, in addressing the midwinter conference of the Public Utility Buyers Group, National Association of Purchasing Agents, in Pittsburgh.

The rough going will prevail even though more steel will be produced this year than ever before, Mr. Shaner said. Demand exceeds output, and defense allocations are taking increasingly larger tonnages from civilian goods.

Be alert for a new approach to planning for the future, Mr. Shaner suggested. Industrialists, he pointed out, are raising their sights on the potentials of future demand.

ASTE Plans "Know-How" Session

Mobilization of production know-how is the order of business for the 1951 meeting of the American Society of Tool Engineers, opening Mar. 14 at the Hotel New Yorker, New York. R. F. V. Stanton, general manager of American Machine & Foundry Co., will use this theme in addressing the banquet session Mar. 16.

Military and industrial officials will get together for an open-forum discussion on correlation of known production techniques with military needs. One point sure to be brought up: Tolerance specifications; how much leeway can be allowed to expedite production yet still meet military requirements.

Gripes Mount on Fast Amortization

Metalworking men, particularly in steel, complain that hit-and-miss policies, red tape and politics in Washington threaten to make fast write-offs ineffective

DISSATISFACTION is growing over maladministration of the fast amortization provision of the Revenue Act of 1950. Steel men are particularly vocal.

"Something drastic had better be done soon to remove the National Production Authority as the bottleneck in the write-off program," a steel company executive told STEEL.

Hit and Miss—Major criticism is that there is no apparent formula or pattern for determining the percentage of the cost on which fast depreciation is allowed. In one case 35 per cent was allowed as the portion of the investment in a new bar mill that could be charged off in five years. In another case 85 per cent was fixed as the portion of the investment in a new coke plant that could be depreciated rapidly. Steel men are puzzled as to how percentages like these are derived.

Another criticism is that the Office of Business Expansion (recently shifted from Stuart Symington's National Security Resources Board to General Harrison's Defense Production Administration) allows no consideration for decreased purchasing power of the dollar.

For Example—Take the case of a proposed bar mill. The application for a certificate of necessity showed the cost as $16 million and the rated capacity as 300,000 tons per year. Since two old bar mills, built in 1910-1911, with aggregate capacity of 200,000 tons per year, will be removed from service to be replaced by the new mill, the increase in capacity will be 100,000 tons, or 50 per cent. The government construed these facts as grounds for a determination that only 50 per cent of the cost, or $8 million should be certified for fast depreciation.

Steel men say no allowance was made for the fact that the purchasing power of the 1910-1911 dollars with which the old mills were built had approximately three times the purchasing power of the 1950-1951 dollar. Had this factor been given just consideration, they say, the new $16 million bar mill would have rated a certifiable value of $13 million instead of the $8 million actually allowed.

Politics in the Wind—Again, steel men do not like the tendency to allow political considerations to enter into the granting of certificates. Favorable action, they say, was rushed through on the New England steel plant application despite the absence of assurances as to where the New England plant would get its metallics and other materials and who would manage and operate the facilities. In cases where politics is not considered, steel men charge, all details as to raw material supplies, transportation, management and the like have to be reported before approval is given.

Another gripe results from the delays in acting on applications for certificates of necessity. It usually takes two months or more from the date the application is filed to the issuance of the certificate. Reason, of course, is the unwieldy chain of responsibility. This involves the ODM, the DPA and the NPA and, through joint committees, still other agencies. Most of the delay, steel men say, occurs in the NPA.

Solution—The element of delay could be eliminated, steel men believe, by elevating the director of the Iron and Steel Division into the staff of Defense Mobilizer Wilson—say, right under General Clay. Something like that could be arranged, they feel, if the high command were

SKYRAIDER SPEEDUP: Activity is apparent in the Douglas Aircraft Co.'s El Segundo, Calif., plant where the AD-Skyraider undergoes final assembly. In continuous production since 1946, the propeller-driven Skyraider is now the standard offensive weapon on all classes of U. S. Navy carriers

made to realize that needless red tape is postponing by at least two months the eventual completion of iron and steel plant expansions which all government officials have hailed as vital to the defense program.

Enamelers Must Convert

Porcelain enameling industry hopes that half its capacity will still be used for civilian output

PORCELAIN enamelers have a tough conversion problem.

They don't have to solve it today, but they must know the answer by May or June. By then, the 20 or 25 firms porcelain enameling for architectural purposes—store fronts, signs—will be hard hit by the cutbacks in commercial construction. By then, many of the 150 or so companies porcelain enameling home appliances, kitchen ware, tubs and other products will be feeling the pinch of nonessential civilian cutbacks.

What To Do?—Porcelain enamelers face this question: What can they do with their enameling furnaces? Most believe they'll be able to continue about 50 per cent of their normal civilian output, although enamelers in the architectural group are less optimistic. Some of the unused furnace capacity can be used to enamel defense products such as joiner bulkheads, submarine mufflers, manifolds, aircraft exhaust pipe, mess equipment, sanitary ware for the armed services' medical departments and barracks equipment, but that work probably won't be enough to keep the entire industry occupied.

Much of the rest of the furnace capacity probably can be used for heat treating armor plate and other armaments. During World War II, some enamelers had to shut down their furnaces, but they could still get subcontracting work for their pickling and other departments. A few porcelain enameling defense contracts have already been awarded. A Detroit shop is enameling exhaust manifolds for tank engines. Of cast iron, those are enameled on the outside for better corrosion resistance.

Going Great—The industry is doing well now on civilian jobs. Its production is limited only by the shortage of steel and lack of frit. February frit allotments have been cut as much as 40 per cent, and many enamelers are living off their inventory. Frit is so tight because it contains cobalt. There are some substitutions for that restricted metal and more use of low-cobalt frit.

Prices of enameled products are now about 10 per cent above what they were a year ago.

Scrap: Enough by 1952?

Steelmakers will need 5 to 7 million tons more if they are to boost ingot production

NEW sources of scrap will have to be developed fast to supply 5 to 7 million additional tons of the purchased materials so the steel industry can produce at the rate of 120 million ingot tons annually by the end of 1952.

So says Robert W. Wolcott, chairman of Lukens Steel Co. and chairman of American Iron & Steel Institute's committee on steel scrap. Scrap sources he sees include old government ships, government machinery scrap hoarded by the Army, Navy and other services, foreign scrap and antique equipment and machines on farms and in industrial plants. He also believes that as much as 500,000 tons of scrap a year can be reclaimed through detinning operations.

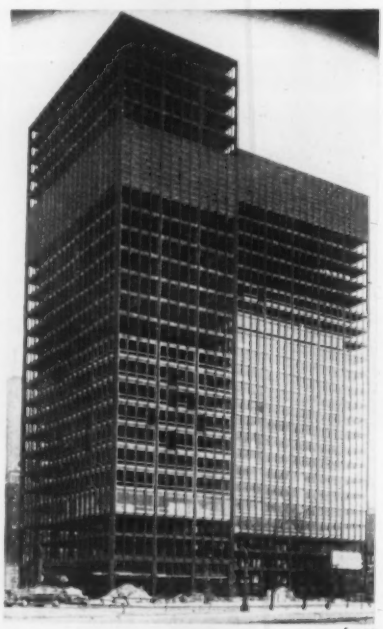
U. S. Help—Stringency has reached the point where more than 100 allocations have been made by Washington to companies badly in need of scrap. In some cases, those allocations involved special grades of scrap, which are particularly scarce.

While the Maritime agency is loath to approve the scrapping of ships, Mr. Wolcott is confident that enough antiquated vessels can be pried loose to provide at least 15,000 to 20,000 tons of scrap per month for some time. There are upwards of 500,000 tons of scrap available on various Pacific islands and he anticipates eventually the recovery of scrap from South Korea.

Gloomy—But he's none too hopeful over the prospect of relief through German scrap imports. He claims that here there are now between 300,000 and 400,000 tons of German scrap ordered from the U. S. which is being shipped to other European countries instead, Italy and England in particular. He estimates that during the first 11 months of last year approximately 200,000 tons came in from Germany.

Mr. Wolcott says there had been a decline in scrap inventories at all metalworking plants of around 450,000 tons from the end of September to January 1; further shrinkage since then. As for the steel industry itself, he estimates that inventories are sufficient for 30 to 35 days' operations, but emphasizes that various plants have far less supply on hand than that.

Co-operation—The steel industry is giving fine response to his committee's recent appeal for the searching of plants for obsolete parts, for machinery and equipment suited for melting. The committee has appealed to foundries through their associations, to make a similar drive. Other plans are underway for reaching other metalworking plants.



Acme

BIG GREENHOUSE: No stonethrower should occupy this new building on Chicago's Lake Shore Drive. The entire structure of the 26-story apartment house is of steel and glass. More than 860 tons of steel and 4 tons of welding rod were used in construction

More Aluminum Coming

Plant that Kaiser will build at New Orleans will have capacity of 200 million pounds a year

THE CALL for more aluminum is bringing a $79 million answer from Kaiser Aluminum & Chemical Corp.

It is starting immediately to invest private funds in that amount to:

1. Build a 200-million-pound-a-year aluminum reduction plant and power facilities at New Orleans.

2. Open its bauxite properties in Jamaica to supplement its present source of raw materials for aluminum production.

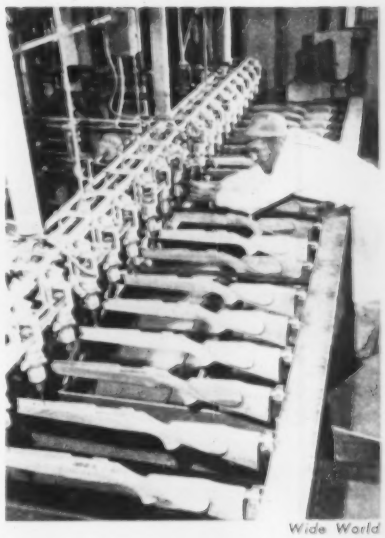
3. Expand and modify its Baton Rouge, La., plant where bauxite is processed into alumina, from which aluminum pig is produced.

Construction of the New Orleans plant will boost the company's capacity to 540 million pounds of aluminum annually, and bring to 80 per cent the expansion of Kaiser capacity since the Korean war started. The New Orleans plant will have four pot lines.

The company aims to start produc-

Wide World

RIFLES DELUXE: Custom-built rifles in calibers from 22 to 375 are turned out by Weatherby's Inc., independent manufacturer of South Gate, Calif. Thirty-five employees supervise manufacture of barrels and stocks. There are 20 major operations in building a rifle and many minor ones. At left is machine which drills approximately 35 barrels a day. During this operation the rifle barrel turns at high speed while the drill remains stationary. This operation is reversed for reaming. Machine at right inlets and shapes 18 rifle stocks from walnut blanks. Hand inletting time is minimized and only final sanding of outside of stock is necessary. Inletting is a critical operation as receiver and barrel must be precisely bedded within a few thousandths of an inch



Wide World

ing aluminum pig at the New Orleans plant the latter part of this year; it hopes to have all four of the reduction lines operating by mid-1952.

As a site for the new reduction and power plants Kaiser is buying 280 acres along the Mississippi river within the New Orleans metropolitan industrial and population zone. The site is served by ocean-going vessels.

Magnavox Adds to Two Plants

A boost in capacity to handle additional military work is being made by Magnavox Co., Ft. Wayne, Ind. Construction will begin soon on a 20,000 square foot addition to its Ft. Wayne plant. Additional machinery is being installed and 40,000 square feet more space is under construction at the Magnavox plant in Greenville, Tenn. Extra capacity will be used for increasing production of television, radio and other electronic products.

Utica To Get Third G-E Plant

A $15 million plant to make electronics equipment for military purposes will be built near Utica, N. Y., by General Electric Co. It will be the third G-E plant in Utica and will employ 2500. Completion date has not been announced.

Metal Shortage Booms Plastics

Greatly increased demand for plastics as substitutes for metals will necessitate plant additions by Allegheny Plastics Inc., Sewickley, Pa. Production facilities to be expanded include those for printing, laminating, blanking and forming of Vinylite, acetate and phenolics.

Navy Places Cutlass Jet Order

The Navy has authorized Chance Vought Aircraft Division of United Aircraft Corp., Dallas, to build a substantial quantity of the F7U-3 Cutlass jet fighter. An improved version of the radical F7U-1 twin-jet tailless fighter, the Cutlass is a fast-climbing model in the over-600 miles per hour class and is adapted to carrier operation. Number of planes to be built was not disclosed.

Navy Orders Carrier Elevators

Modernization of two 27,000-ton aircraft carriers is proceeding with the awarding of a $1 million contract to Westinghouse Electric Corp.'s elevator division for installation of four new airplane elevators. The equipment is needed to accommodate the heavier planes now in use. Each elevator will be capable of moving a modern carrier airplane from hangar deck to flight deck in a matter of seconds.

Landing Gear Capacity Doubled

Menasco Mfg. Co., Burbank, Calif., has sold its Malabar jack manufacturing division to Osborne Machinery Co., San Francisco. Space occupied by the jack division was needed to meet expanding schedules for strut manufacture. With a present backlog of over $18 million, Menasco will double capacity for turning out landing gears.

A-C Tractor Addition Started

Construction of a $2½ million addition to Allis-Chalmers Mfg. Co.'s La Porte, Ind., tractor works is under way. The addition will provide additional space for handling a $180 million defense contract to build high speed tractor cargo vehicles for Army Ordnance Department.

G-E Jet Plant To Be Enlarged

The Lockland, O., turbojet manufacturing facilities of General Electric Co., will be expanded by more than 40 per cent of last December's estimates. Additional space may now total more than 1½ million square feet, and more than 10,000 workers will be employed to build the J-47 aircraft jet engine. In addition to production facilities, Lockland will be headquarters for executive and engineering staffs and for testing and development activities in turbojets and turboprops for Air Force bombers and fighters.

Tank Hull Bookings Multiply

Additional bookings for tank hulls to Baldwin-Lima-Hamilton Corp., Philadelphia, will bring total bookings for this equipment to approximately $60 million. This latest order quadruples the initial contract placed in August, 1949, by Army Ordnance covering fabrication and machining of hulls for the M-46 Patton tank. Final assembly of all tank components in the hulls will be done in the Detroit Arsenal and in the American Locomotive Shops in Schenectady, N. Y.

Ford Tooling Up at Chicago

More than half the machine tools needed to start production of 28-cylinder Pratt & Whitney aircraft engines for the U. S. Air Force are

in Ford Motor Co.'s Aircraft Engine Division plant in Chicago and are being installed in production lines.

'52 Models Go Forward

Passenger car program too far advanced to be affected by materials cutbacks

EQUIPMENT and tooling programs for 1952 model passenger cars, too far along to be scratched by materials shortages and cutbacks, are heading into the stretch drive. They involve large commitments for machine tools, conveyors and a full line of equipment necessary to outfit new plants.

Chrysler's plans to switch its V-8 engine to a new facility at Trenton, Mich., are temporarily snarled by the possibility of having to take on aircraft engine output there, but there is talk of doubling the size of this project to include expanded production of industrial and marine engines. And there is further rumor of another entirely new Chrysler plant to be built in the Detroit area, its exact assignment not yet mentioned.

Dodge Plans V-8—Dodge is going ahead with plans for a new V-8 engine for 1952 and is needling machine builders to hurry up shipments. At one time it was the plan to center this job in three cleared floors of the Dodge Main plant in Detroit, moving 6-cylinder car and truck engine assembly to a large addition now completed at Chrysler's Nine-Mile Press plant. Manufacture of a new type of automatic transmission was supposed to have been included in reorientation of Dodge Main.

Plans are afoot for a completely new Plymouth engine, and with Ford figuring to have a new overhead-valve six in production at Cleveland late this year Plymouth is pushing to keep step with the competition. Some consideration has been given to a V-6 type of engine.

Foundry Patterns Placed—Foundry patterns for the Ford six have just been placed, and this program will be followed shortly by new high-compression V-8s for Lincoln, Mercury and Ford.

Machinery requirements for Buick's new V-8 have been pretty well wrapped up and deliveries should start coincident with completion of a new plant building to house the project in Flint, Mich.

Other projects involving substantial volumes of production equipment include a new Chrysler transmission plant in Indiana; dies, presses and automation devices for Ford's Hamburg, N. Y., pressed steel plant, which should start with the 1952 bodies; and enlarged facilities at Pontiac, including possibility of a V-8 engine.

Tightening Up on Alloys

Schedules for alloy steel production will be tailored to fit supply of alloying elements

TO KEEP alloy steel production within the limits set by the available supply of alloys, NPA's Iron and Steel Division is preparing a revival of control which worked successfully in World War II.

Steel producers will be asked to file by Mar. 15 their melting schedules for May; these will be revised so that alloy consumption will balance supply. This system will be operated by directives at the start and later will be formalized by issuance of an NPA order which will become a part of the projected CMP setup.

Columbium Order Coming—To be issued in a week or two is a columbium order to replace the directives under which use of this metal has been controlled. The columbium situation, as a result of these directives, is well in hand. Practically all of the metal has been going into stainless steel for uses designated by the Department of Defense and the Atomic Energy Commission, but enough has been available to permit use of columbium-stabilized stainless in steam turbines and in some other essentials.

Not Enough Tungsten—The tungsten situation is not yet out of the woods. Requests now are coming in for March requirements, and they are large. Supply of tungsten is sure to be extremely short over the immediate future.

The molybdenum situation continues tight but is better than had been expected. Late in January suppliers of molybdenum were directed to freeze their books and not take any further orders for February delivery. Then a directive permitted shipment of 50 per cent of each DO-rated order in February. Later permission was given to ship 70 per cent of commitments for February in the case of DO-rated orders, and 30 per cent of nonrated orders. Thus was accumulated a pool that has made it possible to take care of substantially all hardship cases. It has been possible to meet all such needs as forging die blocks, steel mill rolls, roller bearings and other essential uses. Molybdenum cutting tool producers have been getting their supplies. The present directive controls will be continued into March.

For Subcontract Opportunities—Check the List

METALWORKING companies are finding it increasingly important to get into defense work as steel, aluminum, copper and other metals are being cut back for civilian production. How successful you are in getting this work depends largely on you. If you can't handle a prime contract your opportunity may lie in subcontracts.

To help you find subcontracts, STEEL this week is beginning to carry a selected list of government-awarded prime contracts that may offer subcontract opportunities. STEEL will publish the list each week.

Product	Quantity	Value	Contractor
Minesweepers	2	$3,000,000	Gibbs Corp., Jacksonville, Fla.
	2	3,000,000	Astoria Marine Construction Co., Astoria, Oreg.
	3	5,000,000	Luders Marine Construction Co. Inc., Stamford, Conn.
	2	3,000,000	Fulton Shipyard, Antioch, Calif.
	2	3,000,000	C. Hiltebrant Dry Dock Co., Kingston, N. Y.
Turbine Generators	10	400,000	Westinghouse Electric Corp., Pittsburgh
Boilers	18	300,000	Foster Wheeler Corp., New York
Rocket Assemblies	4,670,000	4,580,000	General Motors Corp., Oldsmobile Div., Lansing, Mich.
Electronic Tubes	350,000	381,500	Raytheon Mfg. Corp., Waltham, Mass.
	2,000	216,400	Raytheon Mfg. Corp., Waltham, Mass.
Trailers	50	425,000	Steel Products Co., Savannah, Ga.
	50	425,000	Rogers Bros. Corp., Albion, Pa.
	30	900,000	Thew Shovel Co., Lorain, O.
Tractors	175	3,600,000	R. G. LeTourneau Co., Peoria, Ill.
Generators	200	1,000,000	Buda Co., Harvey, Ill.
	150	700,000	Hill Diesel Engrg. Co., Lansing, Mich.
	325	1,600,000	Ready Power Co., Detroit
	200	740,000	Consolidated Diesel Electric Corp., Stamford, Conn.
	50	300,000	Stewart & Stevenson Services, Dallas, Tex.
	5	25,000	Hobart Bros., Troy, O.
Experimental Extrusion of 57mm, 75mm, 20mm gun tubes	1 lot	70,906	Loewy Construction Co. Inc., New York
Broaches etc.	1 lot	212,296	La Pointe Machine Tool Co., Hudson, Mass.

Republic Wins Freedoms Award

Republic Steel Corp. received a first place award in the second annual $100,000 awards program of Freedoms Foundation Inc. at Valley Forge, Pa. The citation to Republic is a composite award for its activities in promoting a better understanding and appreciation of the American economic system. Specifically mentioned are the company's institutional advertising program, an essay contest for high school students, the company's employee magazine, *Republic Reports*, and a training program for supervisory employees in basic economics.

CHECKLIST ON CONTROLS

GOVERNMENT control orders are digested or listed each week in this "Checklist on Controls." For complete copies of NPA orders, write to U. S. Commerce Department, Division of Printing Services, attention E. E. Vivian, Room 6225, Commerce Bldg., Washington 25. For ESA orders, write J. L. Miller, Economic Stabilization Agency, Room H367, Temporary E Bldg., Washington 25.

Materials Orders

RAYON—Amendment of Feb. 15, 1951, to NPA Order M-13 increases percentage of defense-rated business manufacturers must accept. Amendment effective Feb. 15, 1951.

SHIP REPAIR—Supplement 4 of Feb. 16, 1951, to NPA Order M-1 provides for NPA to direct steel companies to accept certified orders for steel for shipyards to use in repair and conversion of seagoing vessels. This supplement, which will provide 9000 tons of steel a month to the yards, applies only to steel production scheduled for shipment in April, May and June, 1951.

LEAD—M-38 limits inventories of pig lead, lead base alloys, lead scrap and lead products to 60 days' supply or a "practical minimum working" supply, whichever is less. NPA Order M-38. Effective Feb. 16, 1951.

ANTIMONY—M-39 limits inventories of antimony and materials containing antimony, other than ores and concentrates, to 60 day's supply or a "practical minimum working" supply, whichever is less. NPA Order M-39. Effective Feb. 16, 1951.

CONSTRUCTION — Amendment of Feb. 19, 1951, to NPA Order M-4 permits an increase in expenditures for alterations and additions to hotels and office and loft buildings. Amendment effective Feb. 19, 1951.

RUBBER—Supplement 1 to NPA Order M-2 reduces the number of types and styles of tires, inner tubes and industrial rubber goods that a manufacturer may produce. Supplement 1 is effective Feb. 19, 1951.

HORSEHIDE FRONTS, DEERSKINS—Amendment of Feb. 19, 1951, to NPA Order M-29 slightly reduces limitations in original order.

COPPER—Amendment of Feb. 19, 1951, to NPA Order M-12 relaxes some restrictions on use of copper and adds other restrictions. Amendment is effective Feb. 19, 1951.

MANGANESE ORE — An emergency order MO-2 by the Defense Minerals Administration places delivery and use of manganese ore under allocation control after Mar. 31, 1951.

ALUMINUM—Amendment of Feb. 21, 1951, to NPA Order M-7 reduces manufacture of aluminum windows and air ducts, and prohibits their manufacture after June 30. Residential-type aluminum windows and aluminum ducts used for heating, ventilating or air conditioning may be completed up to June 30 if they were started by Apr. 30. Nonresidential-type aluminum windows may be completed up to June 30 regardless of when manufacture is commenced, provided that orders for them were received by the manufacturer prior to Feb. 20. For making windows or ducts during March, April, May or June, manufacturers may not use more than 65 per cent of their average monthly consumption of aluminum for the same purposes in the first half of 1950. Amendment effective Feb. 21.

Price Regulations

DEFENSE NEEDS—Amendment 2 to Supplementary Regulation 1 of General Ceiling Price Regulation exempts from the price regulation the defense purchases of items peculiarly adapted for military use although they may be delivered after Apr. 1, 1951, if the delivery is in fulfillment of a contract entered into prior to that date. The amendment also provides exemptions for subcontracts entered into prior to May 1, 1951. Amendment effective Feb. 16, 1951; by Office of Price Stablization, Economic Stabilization Agency.

Assignments of DO Ratings

(As of Feb. 19; subject to change without notice)

CODE NO.	AGENCY	MAJOR PROCUREMENT ITEM
01	Defense	Aircraft
02	Defense	Guided Missiles
03	Defense	Ships
04	Defense	Tanks, Automotive
05	Defense	Weapons
06	Defense	Ammunition
07	Defense	Electronic, Communication Equipment
08	Defense	Fuels, Lubricants
09	Defense	Clothing, Equipage
10	Defense	Transportation Equipment
11	Defense	Building Supplies, Equipment for Overseas Construction
12	Defense	Subsistence
19	Defense	Production Equipment
21	Defense	Miscellaneous
22	Defense	Defense Department Construction
35	NPA or Delegatees	Foreign Additional Military Production
36	NPA or Delegatees	Foreign Economic Cooperation Administration, Nonmilitary
37	NPA or Delegatees	Foreign other than ECA, Nonmilitary
40	AEC	Operation
41	AEC	Construction
42	AEC	Construction Equipment
43	AEC	Privately Owned Complete Facilities
44	AEC	Privately Owned Facilities Additions
45	CAA, NACA, other	Defense Supporting Programs (Replaces former 50, 51)
46	NPA Facilities Bureau	Industrial Expansion
47	NPA	(For Canada; replaces former 55, 56, 57)
48	NPA	(For Interior Department)
49	State Department	(For Voice of America)
60	Coast Guard	Missiles
61	Coast Guard	Aircraft
62	Coast Guard	Construction
63	Coast Guard	Ships
97	NPA or Delegatees	MRO (Used by CAA on authorization by Defense Department for two aircraft companies)
98	NPA or Delegatees	Production Equipment for Certain Prime Contractors
99	Contractors	(May be used to "basket" small rated orders under conditions described in Paragraph 11.9, Section D or Regulation 2 as amended Jan. 11)

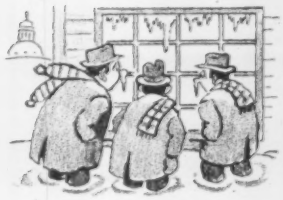
Metal Futures Trading Resumed

Trading in copper, lead, zinc and tin futures is now permitted on the Commodity Exchange. Trading is limited in copper, lead and zinc to liquidation of open contracts. Trading in metal futures was suspended Jan. 26.

Windows of Washington

By E. C. KREUTZBERG *Washington Editor, STEEL*

A Hot Basing Point Bill



Labor Out in the Cold

Guide for Businessmen

Output by the Thimbleful

Because a sellers' market is likely to last indefinitely, some Washington lawyers are recommending that time be taken now to write a good bill on freight absorption

CONTRARY to the opinion of its Senate proponents, private corporation attorneys in Washington are critical of S. 719, the bill to affirm legality of freight absorption. Senator McCarren who introduced the measure (Senators Johnson, O'Conor, Wherry, Capehart and Bricker are co-sponsors) said "it would end the basing point controversy." Says Senator Johnson: "It would be a complete solution to the freight absorption problem." Corporation lawyers in Washington say it does not button down the whole area of controversy; they think it's advisable to take the time to write a good bill —particularly because the sellers' market is likely to last indefinitely, thus eliminating the immediate necessity for legislation to permit a revival of competition at consuming points.

To Wit—The new bill reads: "In any proceeding involving an alleged violation of this section, it shall be a complete defense to a charge of discrimination in price or services or facilities furnished for the seller to show that his differential in price, or his furnishing of greater service or facilities, was made in good faith to meet the equally low price of, or the equally extensive services or facilities furnished by a competitor: Provided, that a seller shall not be deemed to have acted in good faith if he knew or should have known that the lower price or more extensive services or facilities which he met were in fact unlawful."

Proportional Representation . . .

No matter what President Truman and Charles E. Wilson do to placate angry labor leaders, the latter shall rate in Washington as the wallflowers of the defense mobilization dance. Labor leaders have lost face not only at the White House but also on Capitol Hill where a new investigation of the Reds in labor unions is about to start.

For years these labor leaders had thrown their weight around Washington. They have been self-designated economists, statesmen and any type of expert you cared to name. They have been threatening those who did not agree with them and blacklisting legislators who did not vote as they demanded.

The Same Old Act—They haven't changed yet; they surely told Mr. Wilson off when, at their insistence, he finally consented to appoint one of them to an important place in his organization. They haven't sensed that Washington generally realizes that only about 15 million of the country's 65 million workers belong to their unions and that their attempts to dominate the thinking and voting of these 15 million have been vain. But the rebuffs they get in Washington may eventually topple them off their high horses.

Just before the labor walkout from the Office of Wage Stabilization, the Labor Policy Committee demanded latitude to get pay increases up to 12 per cent above the level of last June, plus adjustments to cover the increase in the cost of living since last June, plus unlimited additions for health and welfare purposes. It also demanded: Rollback of prices to the level of last June; an increase of $6 billion in corporation taxes instead of the $3 billion recommended by the President; personal income tax increases in the higher-income brackets only; no increase in excises on such "workers' necessities" as cigarets and gasoline. Yet this group of men couldn't understand why it was not given a dominant voice in the defense mobilization program!

'One Block South, Turn Right . . .'

To make sure visiting business men can do the errands that take them to Washington on defense production matters, the Defense Production Administration is preparing to organize a central information headquarters for such men.

On hand will be copies of all releases and orders of the defense agencies, and men and women capable of answering questions. Visitors will be advised as to what government officers to see on specific matters in the defense setup.

No Antimony, No Mercury . . .

That Alaska is not, as once was hoped, a storehouse of industrial minerals, again is borne out by Bureau of Mines statistics. The territory in 1950 produced 7 tons of copper, 150 tons of lead, 76 tons of tin, 2 tons of tungsten, and 6 tons of zinc. No antimony or mercury was produced in Alaska in 1950.

As Recreated by the 82nd . . .

Rep. Wright Patman again is chairman of the House Select Committee on Small Business as recreated to function in the 82nd Congress. Other members are Mansfield, Evins, Burton, Multer, McKinnon, Halleck, Hill, Riehlman, Seely-Brown, and Curtis of Missouri.

Pointers for Small Plants . . .

"Subcontracting Pointers for Small Plants" is the title of a pamphlet prepared by the Office of Small Business, National Production Authority. Copies may be obtained free by contacting any Commerce Department field office.

GE Tops Patent List In 1950 . . .

A patent analysis made by The Technical Survey, of Newark, N. J., lists General Electric Co. as the leading U. S. patent originator in 1950. Following GE are International Telephone & Telegraph Co., Radio Corp. of America, Westinghouse Electric Corp., E. I. du Pont de Nemours, Standard Oil Co. of New Jersey and Phillips Laboratories Inc.

U. S. Exports Hold

Government wants trade to assure needed raw material imports and to balance commerce

UNITED STATES exports may reach nearly $11 billion in 1951, about the same as in 1950. That's despite materials shortages, growing demands from domestic consumers for the available goods, and declining ECA-financed exports, particularly to Great Britain.

Exporters are optimistic because they think most American companies have learned that their foreign business cannot be profitable on a stop-and-go basis. Many metalworking companies have painfully rebuilt their export markets since the end of World War II and won't drop that trade now even if they can sell everything they make within U. S. boundaries. Once DO orders are taken care of, most foreign customers will be treated just as are domestic.

Uncle Sam Agrees—A second cause for optimism is the sympathetic attitude of the U. S. Washington wants no cessation of exports because: For strategic reasons we must nurse foreign friendships and one of the best ways is through trade; we are increasingly dependent upon foreign raw materials and to get them must keep up the continuity of our foreign trade; we need to keep up exports to pay for rising imports. In 1950, imports exceeded $10 billion and nearly balanced exports for the first time in years. An almost imperceptible trade gap is expected to remain in 1951.

To assure adequate exports, the U. S. may even inaugurate a Controlled Materials Plan for exports, although that is not likely to develop until a CMP is set up for the domestic economy. An export CMP would seek to continue a product shift that has already developed in the U. S. foreign trade—less shipments of unfabricated steel and nonferrous metals and more of finished products, notably capital goods. The U. S. exported steel at the rate of 282,000 tons a month in 1950, 407,000 tons in 1948 and 568,000 tons in 1939. Imports have risen—a monthly rate of 172,000 tons in 1950, 81,000 tons in 1948 and 29,000 tons in 1939.

Ground for Support—A third factor bolstering good export trade is heavy demand for American products abroad. The dollar shortage is vanishing, and markets that favor U. S. goods are once again able to buy them. The Union of South Africa bought $492 million worth of U. S. products in 1948, but only $125 million in 1950 because of the dollar shortage. Trade between the two U.S.A.'s will be closer to the 1948 level this year. Latin American markets are also opening up. Washington is particularly anxious to encourage trade with those to the south of us for strategic reasons. Foreign commerce will be the major topic on the agenda of a Mar. 26 meeting of the foreign ministers of all American republics. Canada continues to be Uncle Sam's best market.

Although the outlook is promising, exporters will have to solve big problems in 1951. Major headaches include prices and red tape. Export price controls are tricky and have not yet been finally spelled out. Since the start of the Korean war, the licensing procedure has slowed down because the administration is now more careful about the destination of exports. If that procedure is not streamlined and if pricing questions hang fire too long, the $1 billion export goal won't be reached this year.

U. K. Steel Nationalization Proceeds Cautiously

IT'S STILL possible—but not probable—that British steel will be denationalized.

The government-owned British Iron & Steel Corp. took over 80 major iron and steel companies Feb. 15, but few changes will be instituted for at least three months. It's barely possible that the Conservatives can force and win a general election in that time and repeal the nationalization act.

Keystone—The 80 companies and their 150 subsidiaries acquired by the government produce 91.8 per cent of the four basic products of the industry—iron ore, pig iron, ingots and hot-rolled products. But the 80 firms produce no more than does U. S. Steel Corp. in a year and have a capacity only double that of Republic Steel Corp. On the basis of employment, two larger industries than steel have already been nationalized by the Labor party in Britain: Coal mining and transport.

In coal and transport, the companies were taken over lock, stock and barrel and lost their separate identities. In steel, a modified kind of nationalization is being tried. Separate companies retain their names, and the management will not be greatly changed. Only comment from one steel company official on the change was this from A. J. Martin, secretary of Stewart & Lloyds Ltd.: "We expect the paper work to increase."

BIG JOB: At new and permanent headquarters are the men who now control the bulk of British iron and steel manufacture. This Central Executive Organization of the Iron and Steel Corp. is responsible to the Minister of Supply for the nationalized industry. Corporate officers, left to right, are: Stephen Wilson, secretary; John W. Garton; Sir John Green, deputy; S. L. Hardie, chairman; Gen. Sir James Steele; Sir Henry Vaughan Berry; and Alexander McBain

Handicapped Are Vital: AMA

Utilizing the physically handicapped to relieve some of the pressure on the labor market caused by the defense effort will be one important phase of the eleventh annual Congress on Industrial Health, which begins Feb. 26, in Atlanta.

Dr. Elmer L. Henderson, president of the American Medical Association, is the featured speaker. The Congress is sponsored by the Council on Industrial Health of the AMA.

Office of Defense Mobilization

Executive Office Bldg.—EXecutive 3300

Director: Charles E. Wilson, Room 102, Ext. 2101.

Special Assistant to Director: Gen. Lucius D. Clay, Room 100½, Ext. 2131.

Assistant to Director on Economics: Col. Alfred E. Howse, Room 182, Ext. 560.

Assistant to Director on Information: W. Howard Chase, Room 174½, Ext. 567.

Information Officers: Scott Hershey, Room 174½, Ext. 418; Stanley Baitz, Room 88, Ext. 3353.

General Counsel: Herbert A. Bergson, Room 178, Ext. 2123.

Defense Transport Administration

Interstate Commerce Commission Bldg.—REpublic 7500

Administrator: James E. Knudson, Room 4146, Ext. 6516.

Deputy Administrator: Homer C. King, Room 4146, Ext. 6403.

Consultant: P. A. Hollar, Room 5107, Ext. 5162.

Consultant: W. S. Rainville Jr., Room 5410, Ext. 5833.

Director of Information: Charles Baxter, Room 4141, Ext. 6309.

Defense Production Administration

All on STerling 9200 except as noted

Administrator: William Henry Harrison, 5800 Commerce Building, Ext. 4423.

Director, Program and Requirements: Charles E. Wampler, 5800 Commerce Building, Ext. 4423.

Director, Office of Business Expansion (certificates of necessity and government loans): Byron D. Woodside, 16 Executive Office Bldg, STerling 4700, Ext. 3258.

Assistant to Director, Office of Business Expansion: Joseph Rand, 1725 F Street N. W., STerling 4700, Ext. 3280.

Acting Director of Public Information: Edward K. Moss, 5111 Commerce Bldg., Ext. 4464. Acting Deputy Director of Public Information: Albert J. Lubin, 5111 Commerce Bldg., Ext. 4464.

Economic Stabilization Agency

Temporary E. Bldg.—STerling 4200

Administrator: Eric Johnston.

Wage Stabilization Board Chairman: Cyrus S. Ching.

Price Stabilization Board Chairman: Michael V. DiSalle.

Metals Price Consultants: Sam Ewing (Youngstown Steel & Alloy); William F. Sterling (American Steel & Wire); Irwin Cornwell (St. Joseph Lead); E. J. Metzger (formerly with Wellman Bronze & Aluminum); Ivan Ulrey; Leo Halpern (Federated Metals Division of American Smelting & Refining); Carl K. Kenz (Kennecott Sales); Charles Potter (Jones & Laughlin); Max Schlossberg (Schlossberg Co.); William Kerber (Hanna Furnace).

Information Officer: Bainbridge Crist.

Defense Minerals Administration

Interior Bldg.—REpublic 1820

Administrator: James Boyd, Ext. 3669.

Deputy Administrator: James Douglas.

Assistant to the Administrator: Lowell B. Moon.

General Counsel: John Hofflund.

Director of Information: Allan Sherman, Ext. 3337.

SUPPLY DIVISION

(Responsible for bringing minerals supply into balance with requirements)

Director: Samuel H. Williston (Cordero Mining), Ext. 3433.

Chief, Copper Branch: James K. Richardson (Kennecott Copper), Ext. 5227.

Chief, Zinc Branch: Otto Herres (Combined Metals Reduction), Ext. 5226.

Chief, Ferroalloys Branch: Philip R. Bradley (Bradley Mining), Ext. 5226.

Chief, Light Metals Branch: James Head (Anaconda Copper Mining).

Acting Chief, Iron & Iron Ore Branch: Robert Ridgway, Ext. 2704.

REQUIREMENTS DIVISION

(Responsible for estimating materials and equipment claims for mining industry)

Director: Harold A. Montag (Joy Mfg.), Ext. 2670.

PRODUCTION EXPANSION DIVISION

(Responsible for arranging contracts involving minerals expansion projects)

Director: C. Otto Mittendorf, Ext. 5371.

Executive Secretary: Landon F. Strobel (administered Premium Price Plan in War Production Board during World War II), Ext. 2210.

Defense Solid Fuels Administration

Interior Bldg.—REpublic 1820

Administrator: Charles W. Connor (formerly with Armco Steel), Ext. 5391.

Deputy Administrator: Edward T. Klett (Anthracite Institute), Ext. 5393.

Assistant to Administrator: G. Don Sullivan (Ayrshire Collieries), Ext. 5391.

Mining Machinery & Equipment Coordinator: Clem C. Austin (Goodman Mfg.), Ext. 2481.

Mining Machinery & Equipment Consultant: Edward H. Holley (consultant to Armco Steel Corp., Middletown, O., and Woodward Iron Co., Woodward, Ala.) Ext. 2076.

Transportation Division Director: Walter J. Howard, Ext. 2076.

General Counsel: Thomas J. O'Brien.

Industry Finance Division Director: Leo Plein.

Coke Division Director: George P. Wilson (Koppers Co.), Ext. 2203.

Equipment and Materials Requirements Division Director: Clyde W. Woosley (Binkley Coal), Ext. 2481.

Defense Petroleum Administration

Interior Bldg.—REpublic 1820

Deputy Administrator: Bruce K. Brown, Ext. 3831.

Assistant Deputy Administrator: Hugh A. Stewart.

Assistant Deputy Administrator and General Counsel: Justin R. Wolf.

Program Division Director: Cecil L. Burrill (Standard Oil of N. J.).

Materials Division Director: Frank Watts (Humble Oil & Refining).

Acting Director of Information: William J. Dougherty, Ext. 3171.

Defense Power Administration

Interior Bldg.—REpublic 1820

Administrator: Clifford B. McManus (Georgia Power Co. and Southern Co.).

Acting Deputy Administrator: D. L. Marlett.

Acting Deputy Administrator: Warren H. Marple.

Director of Information: George S. Holmes, Ext. 3222.

General Services Administration

GSA Bldg.—EXecutive 4900

Administrator: Jess Larson, Room 6137, Ext. 4312.

Special Assistant to the Administrator (for metals and minerals expansion programs under the Defense Production Act): Irving Gumbel, Room 5113, Ext. 5181.

Commissioner of Emergency Procurement Services (for stockpiling): A. J. Walsh, Room 7132, (Seventh and D streets S. W.), District 5700, Ext. 2243.

Commissioner of Federal Supply Service: Clifton E. Mack, Room 3143, Ext. 5268.

Commissioner of Public Building Service: W. E. Reynolds, Room 6342, Ext. 4193.

Director of Information: Joseph S. Cohen, Room 6113, Ext. 4511.

Deputy Director of Information: Herbert C. Plummer, Room 6113, Ext. 4511.

Office of Defense Manpower

Labor Department Bldg.—EXecutive 2420

Executive Director: Robert C. Goodwin, Room 5106, Ext. 780.

Deputy Director: Leo Wertz, Room 3221, Ext. 215.

National Production Authority

Rooms are in Commerce Bldg. unless otherwise noted and, where noted (T) Temporary T. Bldg., or at 801 E. St. N. W.—STerling 9200

Administrator: Manly Fleischmann, Room 5100, Ext. 4461.

Assistant to Administrator: H. G. Wilde, Room 5800B, Ext. 4471.

Special Assistant: David W. Hoppock, Room 5800B, Ext. 4471.

Acting Deputy Administrator: Glen Ireland, Room 5122, Ext. 4476.

Special Assistant to Administrator for Small Business: Edward H. Lane, Room 5106, Ext. 4561.

Assistant Administrator for Industry Operations: Horace B. McCoy, Room 3840, Ext. 3288.

Office of the Assistant Administrator for Industry Operations: Dean O. Bowman, Richard W. Murphy, Room 3844, Ext. 3770, Room 3837, Ext. 3754.

MATERIALS DIVISIONS

Chemical: Joseph S. Bates, director, Room 2358 (T), Ext. 4637.

Copper: Frank H. Hayes, acting director, Room 3077, Ext. 3918.

Forest Products: Gabriel J. Ticoulat, director, 5th Floor, 801 E St., Ext. 3510.

Iron and Steel: David B. Carson, director, Room 3830A, Ext. 4456.

Light Metals: Nigel H. Bell, director, Room 2239(T), Ext. 3530.

Miscellaneous Metals and Minerals: Frank H. Hayes, acting director, Room 3077, Ext. 3918.

Rubber: Leland E. Spencer, director, Room 1305(T), Ext. 3135.

Tin, Lead and Zinc: William W. Hopton, director, Room 3077, Ext. 3897.

Communications Equipment: Calvert H. Arnold, acting director, Room 2065(T), Ext. 4128.

Consumers Goods: Thomas W. Delehanty, acting director, 1st Floor, 801 E St., Ext. 2132.

Containers and Packaging: Charles A. Lewis, acting director, Room 2063(T), Ext. 2166.

Electronics Products: John G. Daly, acting director, Room 2111(T), Ext. 3586.

Leather: Julius G. Schnitzer, director, Room 2208(T), Ext. 3538.

Machinery: Marshall M. Smith, director, Room 2134(T), Ext. 4550.

Motion Picture-Photographic Products; Nathan D. Golden, director, Room 3826, Ext. 3717.

Power Equipment: Robert N. Hatfield, director, Room 1007(T), Ext. 4203.

Printing and Publishing: Donald G. Shook, acting director, Room 4542(T), Ext. 2413.

Technical Scientific Supplies: William Thompson, acting director, Room 2542(T), Ext. 2324.

Textiles: A. Henry Thurston, acting director, Room 2203(T), Ext. 3906.

Transportation Equipment: Robert L. Glenn, director, Room 2007(T), Ext. 542.

DEFENSE ORGANIZATION

OFFICES OF CIVILIAN REQUIREMENTS

Acting Director: Nelson A. Miller, Room 1405, Ext. 2380.

Special Consultant: Lewis Allen Weiss, Room 1405, Ext. 4271.

Special Consultant: Philip J. Kelly, Room 1405, Ext. 2671.

Special Assistant to Acting Director: Lester P. Delidge, Room 1405, Ext. 4271.

OFFICE OF PUBLIC INFORMATION

Acting Director of Public Information: Edward K. Moss, Room 5111, Ext. 4464.

Acting Deputy Director of Public Information: Albert J. Lubin, Room 5111, Ext. 4464.

Publications and Reports Division: Rex E. Greaves, Room 2260(T), Ext. 4631.

Operations Divisions: Rollen B. Kadesch, Room 5004, Ext. 4445.

Field Information: Paul H. Jordan, Room 3728, Ext. 2031.

Public Liaison: Earl A. Nash, Room 2063, Ext. 4548.

Programs: Lee Schooler, Room 5004, Ext. 4445.

IRON & STEEL DIVISION

Director: D. B. Carson, Room 3830A, Ext. 4455-4456.

Deputy Director: Melvin W. Cole, Room 3830A, Ext. 4346-4347.

Assistant to the Director: Frank T. McCue, Room 3323, Ext. 3962-2369-2328.

Staff Assistant: Jacob Levin, Room 3325, Ext. 2273.

Staff Assistant: Richard X. McGowan, Room 3325, Ext. 4682.

Staff Assistant: Robert M. Weidenhammer, Room 3319, Ext. 2214.

Correspondence Clerk: Kathleen Cockrum, Room 3327, Ext. 3339.

Staff Assistant: E. S. Moorhead, Room 3329, Ext. 2196.

Legal Counsel: Richardson Branson, Room 5121, Ext. 4621.

International Economist: J. Joseph W. Palmer, Room 3320, Ext. 2263-3485; Dean Peterson, Room 3320, Ext. 2263-3485.

Wire Section: Norman Melville, Chief, Room 3324, Ext. 4656.

Pipe & Tube Section: A. P. Happer, Chief, Room 3316, Ext. 4437; Willis J. Resiner, Room 3316, Ext. 2437.

Priorties & Statistical Control Section: Kenneth H. Hunter, Chief. Room 3329, Ext. 3974. Joseph P. Boquel, Room 3329, Ext. 3974.

Plant Expansion Section: H. L. Leyda, Room 3309, Ext. 3140; Robert E. Curran, Room 3309, Ext. 3140.

Sheet & Strip Section: W. B. Quail, Chief, Room 3320, Ext. 2700; Milton Englert, Room 3320, Ext. 2529; William R. Nolan, Room 3320, Ext. 2529.

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Warehouse Section: Russell Link, Chief, Room 3314, Ext. 2050-2681; Charles Kramer, Room 3314, Ext. 2681

Forgings Section: H. F. Weaver, Chief, Room 3310, Ext. 2004; J. E. Sweeney, Assistant Chief, Room 3310, Ext. 2609.

Castings Section: A. J. McDonald, Chief, Room 3312, Ext. 2080; Clarence W. Oehler, Room 3312, Ext. 2080.

Refract. & Fluxes Sec.: Marguerite M. Sauers, Chief, Room 3819, Ext. 2679.

Ferroalloys Section: James H. Critchett, Chief, Room 3823, Ext. 2305; Edwin K. Jenckes, Room 3823, Ext. 4164-4695; Peter Reinertsen, Room 3823, Ext. 3483; Harold Larsen, Room 3823, Ext. 4681; Roger Allen, Room 3823, Ext. 3483; David H. Duff, Room 3823, Ext. 4164-4695; Ernest F. Mechlin, Room 3823, Ext. 4164-4695; George Kunkle, Room 3825, Ext. 4695; Theodore W. Yocum, Room 3825, Ext. 4695; Harry Haas, Room 3823, Ext. 3483; Charles M. Offenhauer, Room 3823, Ext. 4695; Frank R. Bailey, Room 3823, Ext. 4681; William D. Crawford, Room 3823, Ext. 4695.

Scrap Section: Marvin S. Plant, Chief, Room 3819, Ext. 4181-4520; Charles M. Brooks, Room 3819, Ext. 4181-4520; John P. Voyer, Room 3819, Ext. 4181-4520; Stuart J. Heiss, Room 3819, Ext. 4181-4520; Ben H. Pritchard, Room 3819, Ext. 4181-4520.

Stainless Steel Section: C. B. Boyne, Chief, Room 3827, Ext. 3332.

Pig Iron Section: John A. Claussen, Chief, Room 3825, Ext. 2342.

Alloy & Cold Drawn Bar Sec.: L. E. Creighton, Chief, Room 3827, Ext. 3333; John J. Boylan, Room 3825, Ext. 2226; George Sands, Room 3825, Ext. 2226.

Tool Steel Section: Felix Kremp, Chief, Room 3825, Ext. 4151.

Metallurgical Advisor: Veryl Graze, Room 3825, Ext. 2226.

Program Section: Charles Halcomb, Chief, Room 3317, Ext. 3152-3171; Schuyler C. Wardrip, Room 3317, Ext. 4639.

Tin Plate Section: Arthur M. Long, Chief, Room 3324, Ext. 3334.

Structural Shapes Section: R. A. Marble, Chief, Room 3312, Ext. 2767.

Plate Section: W. E. Mullestein, Chief, Room 3315, Ext. 4444; William E. Bossert, Assistant Chief, Plate Sec.: Room 3315, Ext. 2988.

Auxiliary Pro. Br.: Lindsey Howell, Acting Chief, Room 3320, Ext. 3549; Charles S. Drew, Room 3320, Ext. 3549.

MACHINERY DIVISION

Temporary T Bldg.—STerling 9200
Room 2134, Extensions 4550, 4688

Director: Marshall M. Smith (formerly president, E. W. Bliss).

Assistant Director: William L. Beck.

Machine Tool Section Chief: Col. P. L. Houser (International Harvester).

Machine Tool Section Assistant Chief: Paul S. Gaston.

Machine Tool Consultants: Payson Blanchard (Bullard); Herbert L. Tigges (Baker Bros.); Robert M. Husband; Edgar J. Seifreat (Seifreat-Elstad); Andrew G. Carey (Carey Machinery).

Information Officer: Louis H. Gerteis, Room 5004, Commerce Bldg., STerling 9200, Exts. 4445 and 4627.

FACILITIES AND CONSTRUCTION BUREAU

Assistant Administrator, for Facilities and Construction: Frank R. Creedon, Room 5807, Ext. 4658.

Assistant to Assistant Administrator: William R. Davlin, Room 5807, Ext. 4679.

Building Materials Division: John L. Haynes, director, Room 801 E St., Ext. 2334.

Construction Controls Division: R. R. Britton, director, Room 801 E St., Ext. 3907.

Industrial Expansion Division: William E. O'Brien, director, Room 3311, Ext. 4545.

Loan Division: Harvey M. Harper, director, Room 5811, Ext. 4558.

Tax Amortization Division: Ross A. Gridley, director, Room 5815, Ext. 4587.

PROGRAM BUREAU

Acting Assistant Administrator, for Program: Charles E. Kohlhepp, Room 5122, Ext. 4491.

Deputy Assistant Administrator, for Program—Room 5122, Ext. 4492.

Consultant to the Assistant Administrator: Melvin L. Anshen, Room 5122, Ext. 4492.

Acting Director, Planning Staff: Lawrence Kegan, Room 5007, Ext. 4213.

Acting Director, Orders and Regulations Division: Charles E. Grim, Room 5001B, Ext. 2533.

Assistant Director for Clearance: Paul L. Arntson, Room 5005, Ext. 4581.

Acting Director, Priorities and Directives Division: Walton C. Grace, Room 2314(T), Ext. 4609.

Acting Director, Program Requirements Division: Robert E. Johnson, Room 5009, Ext. 4525.

Acting Director: Controller Division; Henry Dammeyer, Room 2202(T), Ext. 4629.

OFFICE OF SMALL BUSINESS

(Messrs. Lane and Kelly and Pritchard are in Commerce Bldg.; all others in Temporary T Bldg.—STerling 9200.)

Special Assistant to the NPA Administrator, for Small Business: E. H. Lane, Room 5104, Ext. 4680.

Director John C. Pritchard (Denver steel fabricator), Room 5108, Ext. 4561.

Deputy Director: J. L. Kelly, Room 3844, Ext. 2670.

Assistant to Director: C. F. Hughitt, Room 1410, Ext. 2315.

Chief, Economic and Production Research Division: J. C. Dockeray, Room 1440, Ext. 2434.

Chief, Procurement Assistance Division: E. W. Reisner, Room 1450, Ext. 3011.

Acting Chief, Special Assistance Division: Materials and Equipment Assistance Division: Phillip Bennett, Room 1427, Ext. 2668

Chief, Management Assistance Division: W. L. White, Room 1440, Ext. 2383.

Department of Defense

The Pentagon—LIberty 5-6700

Col. George W. White is chief of the Industrial Services Branch, organized to answer questions and clear requests of industry, and Jay Cassino is assistant chief. They are located in Room 2E771 The Pentagon, and they can be reached by telephone on Extensions 75881 and 75310.

Those wishing to contact personnel in the Munitions Board (the military policy coordinating agency) should see or telephone or write to the Public Relations Adviser to the Munitions Board, Floyd B. Brinkley, Room 3E827 The Pentagon, Ext. 75361.

Small businessmen with problems that require help from the military should see, write or telephone the chief, Small Business Office, Munitions Board, who is Comdr. Phillip F. Ashler, Room 3D760 The Pentagon, Ext. 71481.

For assistance in matters relating to procurement see the Director, Central Military Procurement Information Office, Col. Bernice C. Philipps, Room 3D760 The Pentagon, Ext. 75321.

Maritime Administration

Commerce Bldg.—EXecutive 3340

Director of Information, Stephen C. Manning Jr., Room 4857, Ext. 60

National Advisory Committee for Aeronautics

1724 F Street—LIberty 5-6700

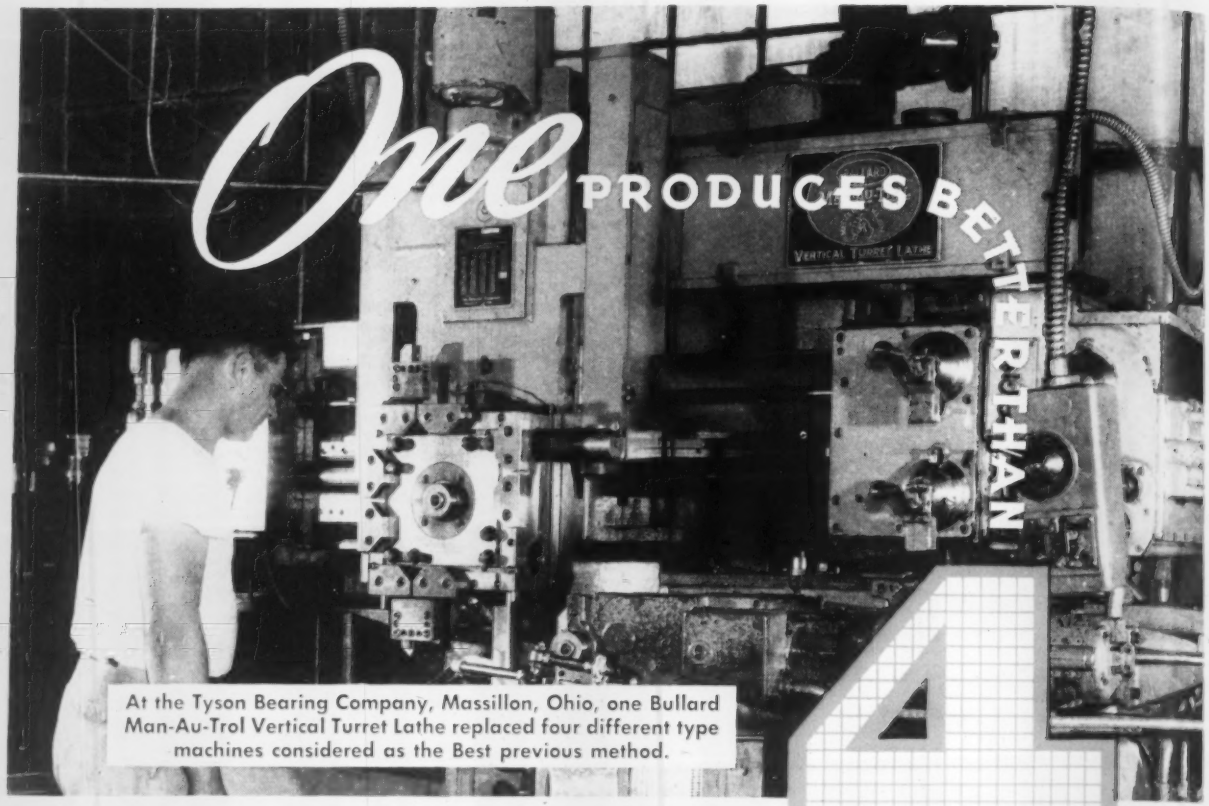
Information Specialist, Walter T. Bonney, Room 201, Ext. 63229.

Research Information Division, Eugene Miller, Chief, Room 202, Ext. 63229.

Atomic Energy Commission

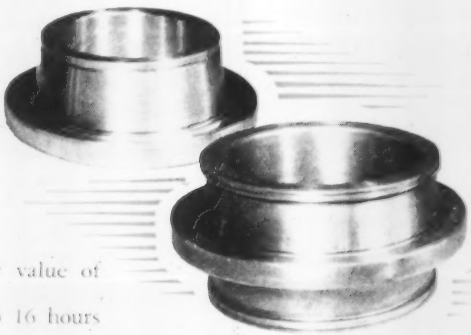
1901 Constitution Ave. N. W.—STerling 8000

Director of Information, Marse Salisbury, Room 204, Ext. 696.



At the Tyson Bearing Company, Massillon, Ohio, one Bullard Man-Au-Trol Vertical Turret Lathe replaced four different type machines considered as the Best previous method.

The Tyson operator says, "It takes no time to get set, less than most other machines I've worked on. We can cut anything that we can hold on this machine. We have never found the limit of how much we can cut — if it's a rugged piece, she sure gets a good bite."



Another statement in this plant illustrates the utility value of Man-Au-Trol V.T.L. "Most of our work is short runs — from 2 to 16 hours for one part. Only occasionally do we run as much as five days on the same part. That's why we like the great Flexibility of Bullard Man-Au-Trol. With the former machines we set one for single purpose boring, another for the turning of cups. Man-Au-Trol does the whole job. I don't know of any machine that does as many operations with such simple tooling."

If this works for Tyson, perhaps it can be Profitable for you.
Ask a BULLARD *man to survey your jobs.*

THE BULLARD COMPANY
BRIDGEPORT 2, CONNECTICUT

By H. C. TUTTLE *Detroit Editor, STEEL*

Mirrors of Motordom

Even if NPA hadn't cut back auto production by 20 per cent the auto industry would have been forced to do so because of reduced steel quotas and material limitations

DETROIT

BY RESTRICTING steel consumption after Apr. 1 to 80 per cent of average first-half 1950 use, NPA has finally succumbed to the clamor that too much steel is being used by the automobile industry. The new order will do what the previously issued orders have not done to date—cut back car production. Without this order and even allowing for the unbounded ingenuity of the automakers, a cutback of similar magnitude would have occurred in second quarter as the result of reduced steel quotas and other materials limitations.

Touch of Diplomacy—NPA hadn't wanted to issue limitation orders on the number of cars that can be produced. Its philosophy was one of encouraging the production for which the "P" in its name stands. But orders issued to date didn't release as much steel to other uses as everyone, including the automakers, believed they would.

The question that naturally arises becomes how much of a depressant to the industry and all its supporting members the cutback will be. Taking the most doleful predictions offered—that car production will be slashed 40 per cent this year, you still arrive at a figure which puts to shame all output records except those of three unusual years—1950, 1949 and 1929. Taking this as the outside limit on the reduction you wind up with 1951 production of just under 4 million passenger cars. Actually, NPA does not at this time want production to drop that far. The 4-million car total, though, comes up frequently in government thinking.

The Formula—That's the figure upon which the as-yet unreleased Hancock formula for pricing cars is reported to be predicated. Present prices are adequate, government insiders say, as long as the industry's production remains above that level. If it drops below, adjustments to cover higher unit costs would be necessary. Some inequities probably exist in today's prices which would be ironed out before the formula, when and if it is to be used. The Detroit area last week had the jitters over the auto cutback, believing that widespread unemployment is in prospect and that many plants are going to be idle until defense work comes along. The jumpiness is accentuated by the apparent plan of defense department officials to put large orders into other areas.

Auto, Truck Output

U. S. and Canada

	1951	1950
January	667,508*	609,878
February		505,593
March		610,680
April		585,705
May		732,161
June		897,853
July		746,801
August		842,335
September		760,838
October		795,947
November		633,678
December		671,284

Weekly Estimates

Week Ended	1951	1950
Jan. 27	167,869	141,036
Feb. 3	151,206	127,428
Feb. 10	116,020	125,737
Feb. 17	174,414	123,712
Feb. 24	180,000	125,285

Estimates by Ward's Automotive Reports

* Preliminary.

Cut Already a Fact — If NPA achieves the 20 per cent cutback in car output that it seeks and doesn't go beyond, the effect on the auto industry will not be too rough. A cutback of 20 to 30 per cent is what everyone in the industry had in mind for months. Buying of parts and supplies by automakers generally is this much under 1950 levels. A 20-30 per cent reduction will throw few people out of work. Overtime will undoubtedly be limited; it is now being used only to make up for production losses caused by the railroad strike.

Suppliers Will Still Roll Along

Reduction in automaking does not spell parallel cuts in the operation of many of the industry's suppliers. The replacement parts industry is due to boom. The controlled materials plan, to become effective July 1, is being geared to provide enough metals for maintenance, repair and operating of private transportation.

The replacement parts industry told NPA it will need about 12 per cent more steel, copper, aluminum, rubber and other materials than last year. The industry sets its requirements at 2,552,422 tons of raw materials and estimates it will be sufficient to keep 49 million vehicles in operation this year.

NPA gave the replacement parts makers no assurance this much material will be provided. But NPA told them that a claimant agency will be set up in CMP for maintenance, repair and operating supplies.

A Slip of the Tongue—And

All components of the auto industry have been waging a campaign against government edicts that take no cognizance of the essential nature of civilian automobile production. Their trade associations and individual spokesmen are quick to hop on chance phrases indicating that some government officials put cars into the nonessential class. One such slip by Michael DiSalle, price stabilization director, got him a rebuke from the president of the National Automobile Dealers Association recently. (DiSalle said in *U. S. News and World Report:* "I can't get too excited about automobiles. They are in pretty good shape. It isn't like World War II—people were just coming out of the depression at that time and many of them were driving old cars. I think there has been a great adjustment in the economy generally. I don't think you will find many people driving 1932 cars right now.") For this NADA's president had an answer—that in 1941 average age of passenger cars was five and a half years. Today it is eight years. Sixty-seven per cent of the cars on the road are of prewar vintage. In 1949, there were 1,738,000 cars of 1932 or older manufacture being driven. He

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added, "I hasten to remind you that the average American's dependence on the automobile is far greater today than ever before in our history."

Splurge at the Auto Show

Most of motordom's hierarchy was in Chicago last week for the festivities in connection with the largest and most elaborate automobile show in history. Under the aegis of the Chicago Automobile Trade Association, the show represented a collection of $5 million worth of cars, trucks and parts. Twenty-one passenger car makers and nine truck builders had their products on display.

Noteworthy because they had not previously been viewed were five car designs. The Nash Healey sports car (STEEL Feb. 19, p. 49) was among these. Also included were four show cars of Kaiser-Frazer, representing points of the compass. The K-F "Safari" was upholstered throughout in zebra and lion skins. Its "South Seas" featured an interior made of Hawaiian flora; palomino hides were used in the "Caballero"; the "Explorer" was tastefully done in polar bear skins.

Buick's show stealer was its experimental XP300 on which the only standard items are "the nuts and bolts."

XP300 is the second GM experimental job of recent times—Le Sabre (STEEL, Jan. 8, p. 39) being the first to be publicized. XP is the protege of Charles A. Chayne, GM vice president in charge of engineering. Chayne is responsible for the engineering of both jobs, and for the styling of XP300, which incidentally carries his monogram at the front end of the chromium louvered side panels. It, like Le Sabre, is powered by a 300-hp V-8 engine using premium gas and methyl alcohol. Both are sports cars incorporating a world of gadgets, and making extensive use of aluminum and magnesium in their body and engine. The XP300 has an interesting safety feature: When its doors are closed, hydraulically operated steel bars slide into place, making the doors a structural part of the body and frame.

Packard's contribution was the more notable because its two newly introduced cars will be made in volume and sold. They are a "hard-top" and a "soft-top" convertible. The two new cars (the hard-top is called the "Mayfair") are mounted on the 122-inch wheelbase of the "200" series. They feature distinctive style notes of the larger "300" and "400" series: The vertically barred grille and the heavier front and rear bumper guards.

Packard Talks on Navy Contract

Packard, whose interest in diesel engines for the Navy has been an open secret for months, has finally received clearance to do some talking. Contracts totalling $20 million were awarded it by the Bureau of Ships last week. The new engines are to be built in 6, 8, 12 and 16 cylinder design. Says President Hugh J. Ferry, they will be "the most powerful marine diesel engine per pound of weight in production." Not yet contracted for is a 4-cylinder diesel for naval use.

'Biggest Military Contract'

Chevrolet now joins Buick in large-scale jet engine manufacture; it can state that the Air Force contract "will be the biggest single military contract ever awarded to Chevrolet." What kind of engine the GM division will produce has not been established. The engine will be assembled and tested in the government-owned plant adjoining the Chevrolet Tonawanda, N. Y., facility. Automotive workers in Chevrolet's present plant will be employed as work progresses on the engine contract and as civilian production declines.

To make sure that seniority works similarly in other areas is part of the UAW's present goal. An agreement to that effect was signed Monday between the UAW and Ford Motor Co. Covering five Detroit-area Ford plants and 80,000 hourly workers, it provides "that seniority employees who are laid off from any of the five Detroit-area plants will be rehired into any other of the five plants where work is available before any new workers are hired. They will retain and accumulate seniority in their "home" plants and will retain all other benefits: Pensions, vacation pay, etc., in which seniority is a factor.

Milwaukee Designer Brooks Stevens Shows His Excalibur

NOT to be outdone, either in name or design, by General Motors' futuristic Le Sabre passenger car, Milwaukee designer Brooks Stevens came up with his newest drawing board effort, Excalibur, a hard-top 6-passenger 2-door sedan of normal dimensions. Although Stevens is now consultant for Kaiser-Frazer, his Excalibur was not created for any specific manufacturer, it was just to show the public his latest ideas in styling for a medium-price car of 1960, and nicely timed with the opening of the Milwaukee automobile show. Noteworthy features: Front corner pillars moved back of triangular ventilator windows, with doors opening around the windows; fenders depressed to legal minimum of 28-inch headlight height; jet-like "nostrils" chromed inside, to carry headlights; front grille eliminated in favor of two breather openings protected by massive bumper having depressed center V opening; high, full-length rub rail with body cut inward below it to minimize scrape points; heavy chrome cuff along lower edge of body; rear trunk lid extending clear across the back, including fenders, and door handles joined directly to the belt line, operated by lifting up a broad panel.

Stevens says he has no specifications for engine or propulsion equipment, adding that his design may end up on some manufacturer's drawing board, or may never see the light of day.

1960's EXCALIBUR

. . . just in time for the Milwaukee auto show

The Business Trend

Strength of nation's defense and civilian production program is emphasized by quick recovery in industrial pace from low level brought on by rail switchmen's strike

THE GREAT AMOUNT of urgency underlying the nation's efforts to build up its military defenses and at the same time maintain a strong civilian economy can be seen clearly from the way in which it injected recovery into the industrial production index.

In one week's time STEEL's industrial production index regained almost all of the ground it lost during the railroad switchmen's strike. Result: The index for the week ended Feb. 17 registered 217 per cent of the 1936-1939 average. This is a 20-point recovery over the strike period's low mark of 197 recorded in the week ended Feb. 10. Before the strike, the index reached 220—in the week ended Jan. 27.

Auto Output Steps on Gas . . .

Most prominent factor in the recovery is automobile production. It surged up to 174,414 passenger cars and trucks in the week ended Feb. 17, and represented the largest outturn since the week ended Nov. 4. The rail switchmen's strike had dropped auto output to 116,020 cars and trucks in the week which ended Feb. 10.

Look for auto output in the week ended Feb. 24 to be even higher than that of the week ended Feb. 17, suggests *Ward's Automotive Reports*.

Steel Gains Too . . .

Steel ingot output strengthened too in the week ended Feb. 17 and was scheduled to show an additional modest gain in the week ended Feb. 24. Even so, the production level will not be back up to the year's high point of 2,025,000 net tons attained in the week ended Feb. 3. Output in the week ended Feb. 17 was 1,969,000 tons, and in the week ended Feb. 24 it was expected to inch up to 1,989,000 tons, the American Iron & Steel Institute reported. To turn out these tonnages the industry is operating at around 100 per cent of capacity.

Downfall . . .

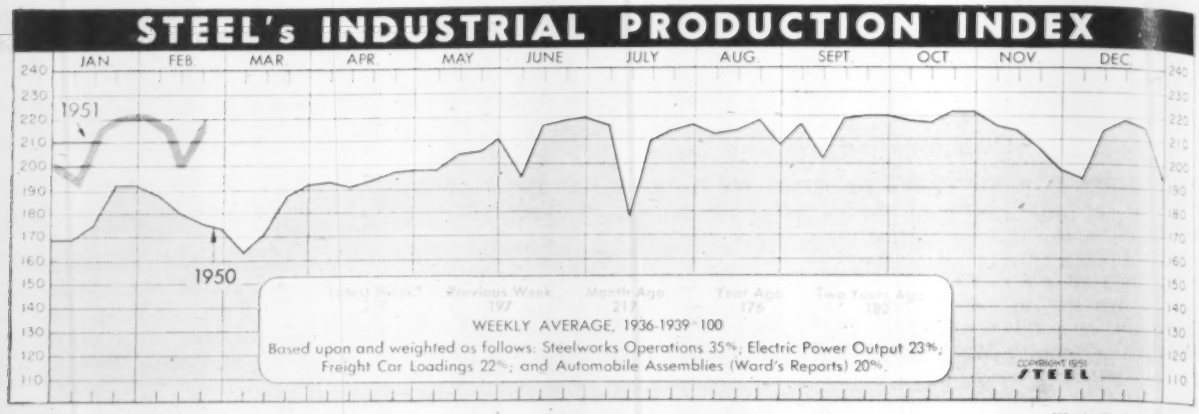
The second week of the two-week work stoppage by the railroad switchmen saw railroad carloadings slip off in the week ended Feb. 10 to 573,163 cars, lowest since last summer.

An 8.3 per cent increase in carloadings in 1950 over 1949 helped Class 1 railroads almost double their net income. Their 1950 net income after interest and rentals is estimated at $786 million, the Association of American Railroads reports. In 1949 the net income was $434 million. Net railway operating income before interest and rentals was $1,039,834,971 in 1950 and represented a 4.22 per cent return on net property investment; in 1949 the rate was 2.86 per cent. Net property investment is the value of road and equipment as shown by the books of the railways.

Strike Victim . . .

Bituminous coal production in the week ended Feb. 10 showed the effects of the rail switchmen's strike. Output that week was estimated at

BAROMETERS of BUSINESS		LATEST PERIOD*	PRIOR WEEK	MONTH AGO	YEAR AGO
INDUSTRY	Steel Ingot Output (per cent of capacity)†	99.0	97.0	99.5	90.0
	Electric Power Distributed (million kilowatt hours)	6,905	6,957	6,909	5,931
	Bituminous Coal Production (daily av.—1000 tons)	1,410	1,588	1,970	432
	Petroleum Production (daily av.—1000 bbl)	5,937	5,861	6,051	4,997
	Construction Volume (ENR—Unit $1,000,000)	$256.5	$555.7	$391.6	$120.0
	Automobile and Truck Output (Ward's—number units)	174,414	116,020	162,485	123,712
	*Dates on request. †Weekly capacities, net tons: 1951, 1,999,035; 1st half 1950, 1,906,268; 2nd half 1950, 1,928,721.				
TRADE	Freight Car Loadings (unit—1000 cars)	700†	573	780	560
	Business Failures (Dun & Bradstreet, number)	165	191	167	218
	Money in Circulation (in millions of dollars)‡	$27,159	$27,125	$27,916	$26,993
	Department Store Sales (changes from like wk. a yr. ago.)‡	+15%	+3%	+31%	0%
	†Preliminary. ‡Federal Reserve Board.				
FINANCE	Bank Clearings (Dun & Bradstreet—millions)	$13,379	$15,450	$16,938	$11,204
	Federal Gross Debt (billions)	$256.0	$256.0	$256.0	$256.7
	Bond Volume, NYSE (millions)	$18.4	$23.6	$30.9	$14.3
	Stocks Sales, NYSE (thousands of shares)	8,836	12,800	18,248	8,849
	Loans and Investments (billions)†	$69.2	$69.5	$70.8	$67.1
	United States Gov't. Obligations Held (millions)†	$31,093	$31,504	$33,046	$37,375
	†Member banks, Federal Reserve System.				
PRICES	STEEL's Weighted Finished Steel Price Index††	171.92	171.92	171.92	156.13
	STEEL's Nonferrous Metal Price Index‡	262.3	262.1	258.5	159.9
	All Commodities†	183.3	182.3	178.7	152.8
	Metals and Metal Products†	188.7	188.9	188.3	168.6
	†Bureau of Labor Statistics Index, 1926=100. ‡1936-1939=100. ††1935-1939=100.				



Week Ended Feb. 17

8,460,000 net tons by the National Coal Association. The preceding week, also strike-affected, saw an output of 9,530,000 tons. Aggregate production this year, however, is well ahead of that for the corresponding period of last year, when a miners' strike plagued industry. Output in 1951 through Feb. 10 totaled 62,420,000 tons, compared with only 36,962,000 in the like period of 1950.

Buildup for Industry . . .

Industrial buildings again held top place in engineering contract awards by totaling $63.9 million in the week ended Feb. 15. That week's total of engineering contract awards was $256.5 million, says *Engineering News-Record*. That amount consists of $162.3 million in private contracts and $94.2 million in public works.

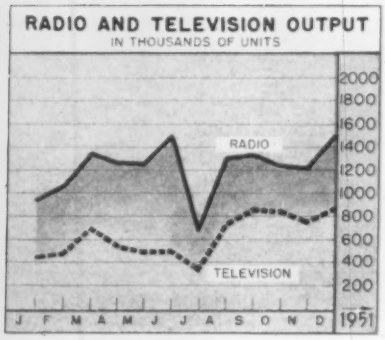
Business Thaws Out . . .

Department store sales, which were slowed down sharply by the severely cold weather in the week ended Feb. 3, recuperated somewhat in the week ended Feb. 10. Dollar volume of sales that week were 15 per cent over the corresponding week of last year. In the week ended Feb. 3 the gain over the like week of last year was only 3 per cent, in contrast to gains of 25 to 30 per cent in preceding weeks of this year.

Nonstop Prices . . .

For the fourteenth consecutive week the government's wholesale price index set a new alltime record. This put the index in the week ended Feb. 13 to 183.3 per cent of the 1926 average.

That's the third week since the government slapped its freeze on prices. Why does the index keep on climbing to new high marks? Some com-

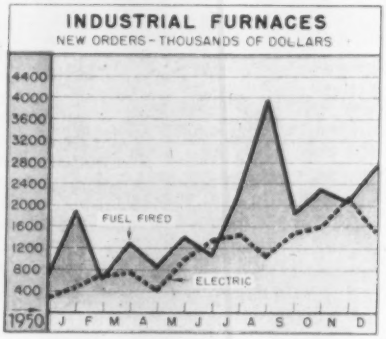


Radio and Television Output

Thousands of Units

	Radio		Television	
	1951	1950	1951	1950
Jan.		935		439
Feb.		1,059		480
Mar.		1,349		687
Apr.		1,254		543
May		1,245		486
June		1,491		502
July		666		327
Aug.		1,304		721
Sept.		1,335		844
Oct.		1,230		838
Nov.		1,216		739
Dec.		1,506		858
Total		14,590		7,464

Radio-Television Mfrs. Assoc.

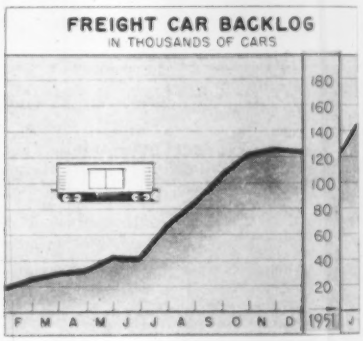


Industrial Furnaces

New Orders—Thousands of Dollars

	Fuel Fired*		Electric	
	1950	1949	1950	1949
Jan.	1,914	1,047	473	948
Feb.	616	636	697	402
Mar.	1,300	305	753	436
Apr.	837	322	415	543
May	1,392	438	982	762
June	1,166	1,978	1,328	196
July	2,247	594	1,445	329
Aug.	3,927	706	1,039	589
Sept.	1,817	589	1,485	318
Oct.	2,306	269	1,603	565
Nov.	2,068	464	2,157	293
Dec.	2,749	718	1,505	281

* Except for hot rolling steel.
Industrial Furnace Mfrs. Assn.



Freight Car Awards and Backlogs

	Awards		Backlogs*	
	1951	1950	1951	1950
Jan.	26,356	9,376	144,758	19,026
Feb.		9,065		26,055
Mar.		6,201		30,539
Apr.		3,298		32,857
May		11,636		42,300
June		2,095		40,585
July		30,065		67,084
Aug.		23,850		86,156
Sept.		25,111		106,611
Oct.		21,886		122,148
Nov.		10,573		126,870
Dec.		3,326		124,489
Total	156,482		* End of month	

American Railway Car Institute

Charts—Copyright 1951, Steel

modities and services are exempted from the freeze.

Well then, you may ask, isn't the rate of climb slowing down? Not much. Look at the record: In the week the price freeze was slapped on (week ended Jan. 30) the index rose 0.9 point over the preceding week. In the week ended Feb. 6 the index went up 1.4 points over the preceding week; in the week ended Feb. 13 the index rose 1.0 point.

In the three weeks preceding the price freeze the increases were: 1.3 point in the week ended Jan. 9; 0.6 point in the week ended Jan. 16; and 0.3 point in the week ended Jan. 23.

The advance in the week ended Feb. 13 put the index 2.6 per cent above Jan. 16 and 16.8 per cent above that which prevailed in the May 24-June 24, 1950, period. The principal increase in the week ended Feb. 13 was in farm products which advanced 1.5 per cent, with grains and livestock rising 2.5 per cent and 2.7 per cent, respectively. Metals and metal products declined slightly, but all commodities other than farm products and foods advanced to a new peak.

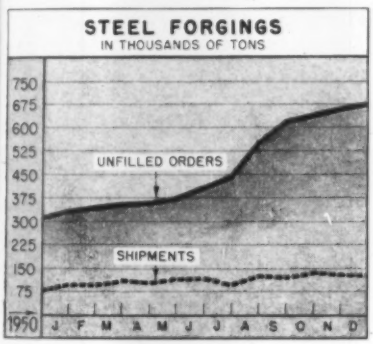
The U. S. Bureau of Labor Statistics, which calculates the wholesale price index, adds this note: Because many commodities have been withdrawn from the markets, the weekly index has not fully reflected the impact of the General Ceiling Price Regulation. The last reported transaction price was used for cotton, wool and finished textile products.

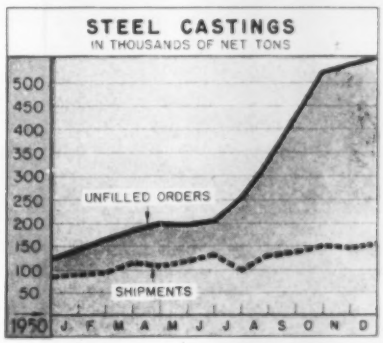
Trends Fore and Aft . . .

Factory sales of standard size household vacuum cleaners in January totaled 282,305 units, down 2.2 per cent from 288,756 in December. . . . Bingham-Herbrand Corp., Toledo, O., manufacturer of drop forgings, metal stampings and tools, expects to be at least 30 per cent on defense work by mid-1951 . . . Employment in metalworking plants rose slightly between mid-December and mid-January to a postwar peak of 7 million; since the start of the Korean war it has risen nearly 700,000.

Issue Dates of Other FACTS and FIGURES Published by STEEL:

Construction	Feb.5	Indus. Production	Feb.12	Ranges, Elec.	Feb.5
Durable Goods	Feb.12	Ironers	Feb.19	Ranges, Gas	Dec.4
Employ., Steel	Jan.29	Machine Tools	Feb.12	Refrigerators	Jan.15
Fab. Struc. Steel	Feb.12	Malleable Cast.	Feb.5	Steel Shipments	Dec.25
Foundry Equip.	Jan.29	Metalwkg. Employ.	Feb.19	Vacuum Cleaners	Feb.19
Furnaces, W. Air	Jan.22	Price Indexes	Feb.19	Wages, Metalwkg.	Jan.29
Gear Sales	Feb.12	Pumps, New Orders	Feb.5	Washers	Feb.19
Gray Iron Castings	Jan.8	Purchasing Power	Feb.5	Water Heaters	Dec.25





Steel Forgings

Thousands of Net Tons

	Shipments		Unfilled Orders*	
	1950	1949	1950	1949
Jan.	93	124	327	571
Feb.	93	111	341	540
Mar.	109	120	350	503
Apr.	99	104	357	465
May	114	92	373	412
June	117	101	408	377
July	95	70	446	348
Aug.	124	97	548	312
Sept.	122	88	620	294
Oct.	137	81	643	280
Nov.	130	73	657	287
Dec.	128	78	674	308

* For sale, U. S. Bureau of the Census.

Steel Castings

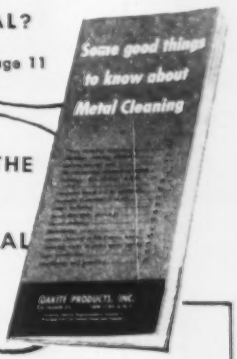
Thousands of Net Tons

	Shipments		Unfilled Orders*	
	1950	1949	1950	1949
Jan.	88.8	140.6	142.5	338.9
Feb.	91.8	135.0	165.2	320.2
Mar.	111.8	138.9	185.6	284.8
Apr.	107.0	120.0	201.6	250.5
May	117.9	106.2	198.0	191.5
June	131.1	116.1	206.8	173.2
July	98.3	78.7	255.4	155.5
Aug.	128.4	90.0	329.9	143.6
Sept.	134.6	86.5	428.0	127.7
Oct.	149.6	70.7	521.8	124.8
Nov.	145.9	76.4	537.7	117.9
Dec.	155.3	84.5	554.2	122.9

* For sale, U. S. Bureau of the Census.

WHAT'S THE FASTEST WAY TO CLEAN METAL?
See page 11

WHAT'S THE MOST ECONOMICAL WAY?
See page 9



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- ☐ Electrocleaning steel
- ☐ Electrocleaning nonferrous metals
- ☐ Pickling, deoxidizing, bright dipping
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- ☐ Pre-paint treatment in tanks and by hand
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- ☐ Barrel cleaning
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As part of their investigation, Valley engineers tested various methods of attaching the spray control to the spray plate. The simplest, most effective method proved to be a single push-on type SPEED NUT. It also turned out to be the most economical—as indicated by the substantial savings mentioned above.

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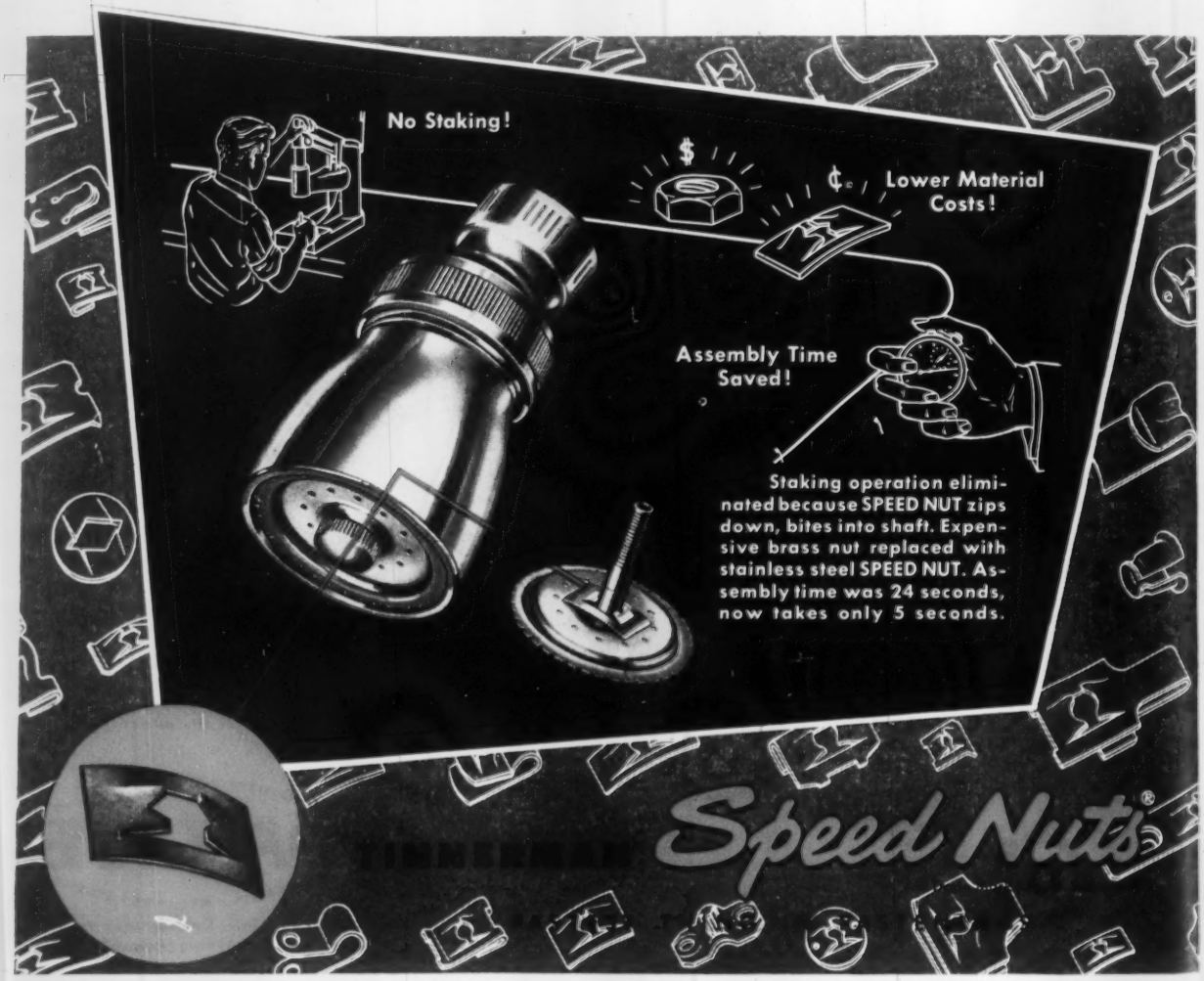
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Assembly Time Saved!
Staking operation eliminated because SPEED NUT zips down, bites into shaft. Expensive brass nut replaced with stainless steel SPEED NUT. Assembly time was 24 seconds, now takes only 5 seconds.
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Men of Industry

ERNEST S. THEISS
chief engineer, Davey Compressor

Ernest S. Theiss was appointed chief engineer, **Davey Compressor Co.,** Kent, O. He was assistant chief engineer for the last six years, and succeeds **W. W. Warner,** recently named company vice president.

E. C. Row is the newly elected president and general manager of **Chrysler Corp. of Canada Ltd.,** Windsor, Ont., to succeed the late **C. W. Churchill.** Mr. Row has been with Chrysler and Dodge in the United States and Canada for more than 34 years, and for the last five years has been vice president and general manager in Canada.

Charles C. Sigmier, vice president, Cleveland Trust Co., was elected chairman of the board of **Parker Appliance Co.,** Cleveland, to succeed **Herbert I. Markham,** who continues as chairman of the finance committee of the board. Mr. Sigmier resigned his post at Cleveland Trust Co.

J. M. McFadden was named treasurer, **Axelson Mfg. Co.,** Los Angeles, to fill the vacancy created by the recent death of **O. W. Carlson.**

C. A. Kral, Chilean management representative for **Koppers Co. Inc.,** at Concepcion, Chile, since 1949, was appointed a vice president in Kopper's engineering and construction division.

J. Herbert Babcock was elected a vice president of **Hooker Electrochemical Co.,** Niagara Falls, N. Y., and will be in charge of development and research. **Charles H. Winkler** was made assistant treasurer of the company and **Thomas F. Willers** was made comptroller.

T. L. SWANSEN
Ladish vice president-mfg.

Ladish Co., Cudahy, Wis., appointed **E. O. Dixon** vice president in charge of research and metallurgy, and **T. L. Swansen** vice president in charge of manufacturing. Mr. Dixon has been with the company for over 20 years. Mr. Swansen joined Ladish in 1947 as chief engineer.

R. H. Anderson was appointed director of purchases, **New Holland Machine Division,** Sperry Corp., New Holland, Pa. **D. M. Nason** was named purchasing agent of components and supplies; **F. E. Gorton** is purchasing agent, raw materials.

New officers named by **Lewyt Corp.,** Brooklyn, N. Y., are: **Walter J. Daily,** vice president, vacuum cleaner division; **Jerome L. Strauss,** vice president, contract manufacturing division; and **Irving J. Bottner,** treasurer of the company.

Cleveland Crane & Engineering Co., Wickliffe, O., appointed **A. C. Adams** general plant superintendent.

Donald J. Finlayson was appointed manager of the merchandise division of **Bridgeport Brass Co.,** Bridgeport, Conn.

William R. Gerhardt was appointed assistant director of procurement for **Remington Rand Inc.,** New York. He was associated with Mallinckrodt Chemical Works, St. Louis.

L. E. McHaney has joined **Texas Engineering & Mfg. Co. Inc.,** Dallas, as contract administrator with supervision over all Temco contracts, both with the government and with other manufacturers.

A. R. WISE
asst. gen. mgr., Cleve. Tapping Machine

A. R. Wise, vice president and sales manager, **Cleveland Tapping Machine Co.,** Hartville, O., subsidiary of Automatic Steel Products Inc., was appointed assistant general manager. He has been with the subsidiary company for the last five years as vice president, and formerly was with Spun Steel Corp., Canton, O., a division of Automatic Steel.

Steel Warehouse Co. Inc., South Bend, Ind., appointed **Rubin Gould** sales manager; **John Gorman,** purchasing agent; **Lee Zack,** general warehouse superintendent.

Ralph Osborn, sales manager, Airquipment Co., was appointed vice president and general manager, **Aerol Co. Inc.,** and **Airquipment,** subsidiaries of Lockheed Aircraft Corp., all of Burbank, Calif.

Frank L. Murphy, former chief engineer, **Pullman-Standard Mfg. Co.,** was added to the Washington sales staff as assistant vice president.

Phillip J. Potter was appointed manager of the Detroit plant, **Federal-Mogul Corp.,** where, since last August, he has been manufacturing manager.

C. J. Gerker was appointed general manager, **Ohio Hoist & Mfg. Co.,** Cleveland. He formerly was vice president and general manager, Midway Tool Co. Inc., Melvin, O.

Harry D. Hanafus was appointed purchasing agent of the recently formed electronic tube division, **Westinghouse Electric Corp.,** with headquarters at the company's plant

in Bloomfield, N. J. **Harry F. Blythe** will be manager of accounting for the new division.

I. C. Rowe was elected secretary, and **Munro Corbin**, controller of **Rockwell**

I. C. ROWE
. . . secretary of Rockwell Mfg.

Mfg. Co., Pittsburgh. The controller's office was vacated by **J. E. Ashman**, vice president, who in addition to his responsibilities with the Rockwell headquarters office, is in charge of the company's power tool divisions. Mr. Rowe succeeds **E. W. Meyers**, recently retired.

General Electric Co. appointed **J. C. Mogavero** facilities engineer in its chemical department's manufacturing division, and **Vernon R. Childress**, manager of sales analysis and planning, chemicals division, Pittsfield, Mass. **Clyde E. Albro** was appointed sales development supervisor, mica products, Schenectady, N. Y. **Ralph E. Donnelly** is manager of the Fitchburg, Mass., turbine sales division. **E. H. Howell** was appointed special representative of the company's apparatus department in Washington, and is succeeded by **D. E. Craig** as sales manager, GE meter and instrument divisions, Lynn, Mass. **Francis K. McCune** was appointed manager of engineering, large apparatus division, Schenectady, to succeed **E. E. Johnson**, named general manager, general engineering laboratory. **William E. Johnson** succeeds Mr. McCune at Richland, Wash., as assistant general manager, nucleonics department.

Link-Belt Co., Chicago, appointed **Kendrick M. Hickman** as manager of agricultural sales for its Ewart, Indianapolis, plant. **Maurice J. Erisman**, chief engineer at the Los Angeles plant, was appointed assistant chief engineer for the Pershing road Chicago plant, and is succeeded at Los Angeles by **Homer J. Foye**, formerly chief engineer, Seattle plant.

Charles E. Leasure was named works accountant, Butler Division, **Armco Steel Corp.**, Middletown, O.

Victor P. Johnson has joined the New York sales staff of **Bigelow-Liptak Corp.**

Frank R. Hunter was named manager of a new branch office of the general machinery division of **Allis-Chalmers Mfg. Co.** in Wichita, Kans.

Patrick J. Patton was appointed Milwaukee manager, commercial sales division, **De Laval Steam Turbine Co.**, Trenton, N. J. He will have headquarters at 1932 N. 117th St., Wauwatosa, Wis.

Walter D. Monroe Jr. was elected chairman of the board and president

WALTER D. MONROE JR.
. . . heads Chicago Steel Service

of **Chicago Steel Service Co.**, Chicago. Other officers are: **Donald F. Grace**, vice president and secretary; **Thomas J. Carmody**, vice president; and **J. Hampton Monroe**, treasurer.

Establishment of a new factory branch in Houston, and appointments of three new branch managers is announced by **Trailmobile Co.**, Cincinnati. **John D. Parobek** is branch manager at Houston; **Thomas Peacock**, branch manager at Charlotte, N. C.; and **Robert S. Sawyer**, branch manager at Oklahoma City, Okla.

C. A. Wagner, with headquarters in Dallas, was appointed by **Billings & Spencer Co.**, Hartford, Conn., as its direct representative for Texas, Arkansas, Louisiana and Oklahoma.

American Metallurgical Products Co., Pittsburgh, announces that **William M. O'Donnell** has joined its executive staff and will be engaged in sales and metallurgical development.

James D. Copeland was named administrative assistant in the industrial relations department, **Drav Corp.**, Pittsburgh.

Robert I. Baxter was appointed New York district sales manager, **Penn Steel Castings Co.**, Chester, Pa.

Ronald W. Olmstead was appointed treasurer, **Utica Drop Forge & Tool Corp.**, Utica, N. Y.

A. L. Whiton of Chicago was elected president, **Wirebound Box Manufacturers Association**, at its annual meeting in New Orleans this month. He succeeds **Norris W. Embry**, also of Chicago, who was named vice president.

Kenneth Critzer and **Edward J. Koberna** were named assistant works managers at **White Motor Co.**, Cleveland. Mr. Critzer will have charge of machining and unit assembly, standards and maintenance departments. Mr. Koberna will direct truck and cab assembly, sheet metal and salvage departments.

Two promotions in the operating department of **Lukens Steel Co.**, Coatesville, Pa., are: **William D. Taylor**, named assistant manager of fabrication of its division, By-Products Steel Co.; and **Robert J. Simes** was named assistant superintendent, mechanical maintenance department.

H. V. Lindbergh was appointed a vice

H. V. LINDBERGH
. . . Kaiser-Frazer vice president

president of **Kaiser-Frazer Corp.**, Willow Run, Mich. Associated with various Kaiser interests since 1933, Mr. Lindbergh was manager of styling and design and assistant secretary of Kaiser-Frazer since 1948. In his new

HERBERT B. NECHEMIAS
manages indus. sales, Wagner Electric

H. EDWARD NEALE
asst. sales manager at Bullard

W. W. BRESNAHAN
Hynes Steel Products V. P.-gen. mgr.

capacity he will represent the company at Fairchild Engine & Aircraft Corp., Hagerstown, Md.

Herbert B. Nechemias was appointed manager, industrial sales department, **Wagner Electric Corp.**, St. Louis, succeeding **J. S. Smith**, appointed director of purchasing.

E. A. Williams Jr., formerly vice president in charge of production, Climax Fire Brick Co., has joined the operating department, **North American Refractories Co.**, Cleveland.

Robert T. Griebling, a fellow of Mellon Institute, was appointed to serve as executive secretary of the **Air Pollution & Smoke Prevention Association of America Inc.**, the headquarters of which, hitherto located in Chicago, will be moved to Pittsburgh and housed in Mellon Institute.

John W. Nestor was appointed assistant manager, finishes division, **E. I. du Pont de Nemours & Co. Inc.**, Wilmington, Del., to succeed the late **M. A. Dibble. Joseph B. Dietz** becomes assistant director of sales, and **William P. Fisher** is now manager, industrial sales.

Bullard Co., Bridgeport, Conn., appointed **H. Edward Neale** assistant sales manager. He joined the company in 1935 as a student engineer. In this capacity he served in various departments throughout the plant until 1947 when he was selected as company representative for the New York state territory. In 1949 he was given the Chicago territory working out of the offices of Marshall & Huschart Machinery Co. and is succeeded there by **James L. Shay**. Mr. Neale is located at Bridgeport.

Ambrose L. Moll was elected treasurer, **Atlas Mineral Products Co.**, Houston. He was office manager.

David W. Jones Jr., Denver, was appointed sales agent, **Babcock & Wilcox Tube Co.**, in the Rocky mountain area. His headquarters in Denver are at 2600 Forest Ave.

W. C. F. Hessenberg was appointed deputy director of the **British Iron & Steel Research Association**, London, England.

Harold W. Delzell, B. F. Goodrich Co., tire division, Akron, was elected president, **Tire & Rim Association Inc.**, Tower building, Akron.

Promotions to fill three newly created positions are announced by **Hynes Steel Products Co.**, Youngstown. **W. W. Bresnahan** is new vice president and general manager, **R. R. Cook**, vice president in charge of sales, and **S. J. Novak**, vice president in charge of operations.

New York Belting & Packing Co., Passaic, N. J., named **W. A. Lindfors** as factory representative in Minnesota, northwest Wisconsin, North and South Dakota and northern Iowa.

Harold F. Randolph, vice president, **International Heater Co.**, Utica, N. Y., was elected president to succeed the late **Leslie R. Taylor**.

John M. Auty, secretary and treasurer, **Pittsburgh Screw & Bolt Corp.**, was named a director.

Charles T. Fisher Jr. was elected to the board of directors, **Campbell, Wyant & Cannon Foundry Co.**, Muskegon, Mich., to succeed **N. R. Feltes**.

Lorenz W. Sievers, formerly with Fisher Body, was appointed general manager at the new Detroit plant of **Capitol Engineering Reproduction Co.**

OBITUARIES...

William H. Seaman, 64, chairman of the board and president, **National Roll & Foundry Co.**, Avonmore, Pa., died Feb. 13. Before joining National Roll in 1941 he was vice president in charge of rolls, Mesta Machine Co.

Emil Metterhausen, 70, president, **Wallace Supplies Mfg. Co.**, Chicago, died Feb. 11 in Miami, Fla. He was president of the pipe and tube bending machine firm for 47 years and also was vice president, Wallace Tube Co., Chicago.

Edward J. Helline, 48, general sales manager, Reliance division, **Eaton Mfg. Co.**, Massillon, O., died Feb. 8.

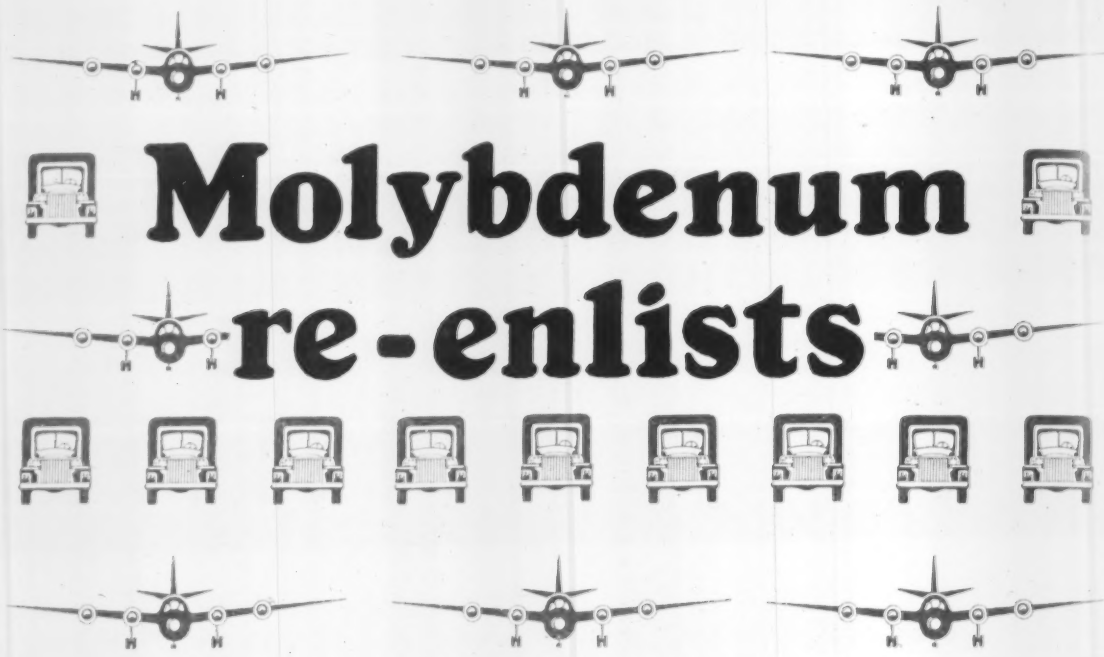
Paul Coddington, 58, president, **Lakeside Bridge & Steel Co.**, Milwaukee, died Feb. 9 of injuries suffered in an automobile collision.

John F. Thomas, 63, chairman of the board and treasurer of **Sargent & Greenleaf Inc.**, Rochester, N. Y., died Feb. 8.

Francis A. Troendle, 61, treasurer and assistant secretary, **Midvale Co.**, Philadelphia, died Feb. 2.

Albert W. Peck, 70, retired export sales manager, **Stanley Tools Division**, Stanley Works, New Britain, Conn., died Feb. 15.

Leonard G. Schlacter, production manager, **New Process Gear Corp.**, Syracuse, N. Y., died Feb. 13.



Molybdenum re-enlists

As in World War II, the needs of our Government for defense are so large as to require a control over the uses of Molybdenum. Molybdenum distribution and inventory have been put under control by the National Production Authority, thus directing the available supply into proper channels.

In this rapidly expanding alloy age, a shortage of all alloying elements can be expected during the present crisis.

The Climax Molybdenum Company pledges to continue its labors to increase the availability of Molybdenum at as rapid a pace as possible. In the meantime, our technical staff is at your service to discuss ways of conserving Molybdenum.

Climax Molybdenum Company
500 Fifth Avenue · New York City

Production AND Engineering NEWS AT A GLANCE

JET COOLING TOOLS— In hobbing splines on alloy steel bars for vehicle suspension elements, startling increases in hob life were observed following the novel installation of a device for blowing cold carbon dioxide gas through a 0.009-inch orifice over the tool at its point of contact with the work. The equipment, using dry ice as the source for the CO_2, cost only $1200 and paid for itself in a short time from the reduced wear on hobs. Possibility is seen of using the CO_2 jet in drilling armor plate, with similar savings in tool costs.

COMPRESSION SIZING— Tubing sized by taper-grooved dies which rock back and forth over a supporting mandrel (p. 74) may offer advantages over conventional cold-drawn material in terms of wall thickness uniformity, surface finish or special section shape. The process also is readily adaptable to production of bimetal tubing.

ROLL BACK THOSE FRONTIERS— Jolting to many holders of patents on products or articles which they had thought distinctive was the recent Supreme Court decision, declaring: "It is not enough that an article is new and useful . . . a patent must serve the ends of science—push back the frontiers of chemistry, physics and the like; make a distinctive contribution to scientific knowledge." Take away that better mousetrap; the patent office will have no truck with it.

BLACKBOARDS GOING GREEN— If the old school slate is not relegated to limbo yet, it will be when the news gets around about a new type of chalkboard made in porcelain-enameled steel. Schools and railroads are the two largest users of chalkboards (or blackboards if you are old-fashioned). In porcelain enamel, the boards can be made of a restful green shade, are easily erased and cleaned, produce no glare from any angle, cost less than slate. And no chalk-squeak either.

COATINGS UNDER PRESSURE— Research chemists have postulated that the highest degree of metal deformation and drawing speed is attained only when the metal surface itself is filmed with an integral coating of a fusible metal or a fusible salt which will melt below the welding point of the tool or the work. This could point up weaknesses of conventional organic lubricants (p. 76) which may carbonize at temperatures below the welding point of ferrous metals, galling the tool or scratching the work.

TELEVISING CORROSION—Laboratory detection, study, recording and analysis of corrosion phenomena are being handled in a new setup devised by electrochemists of Armour Research Foundation. The sample on which corrosion occurs is a metal cylinder dipped in some corrosive solution, rotated several hundred times a minute and scanned with a stationary probe electrode. The latter is a plastic arm containing 11 silver wires, placed about 0.02-inch from the submerged cylinder, and arranged to pick up the minute electrical currents originating in the local cells which are the corrosion mechanism. The currents can be amplified and viewed on an oscilloscope screen or photographed. The technique can be used for investigations of cathodic protection, corrosion inhibitors, stress corrosion and in fundamental corrosion studies.

WHAT DO EYES COST?— Careful consideration of an effective eye-safety program can be demonstrated to pay off in dollars and cents to industries where eye hazards are inherent. Carelessness has always been a principal obstacle (p. 77), and compensation payments are small solace to workmen who have not heeded safety admonitions.

SUBSONIC, TRANSONIC, SUPERSONIC— Both single and dual contrarotating propellers of six or eight blades in two rows of three or four each have been perfected by Curtiss-Wright for use in high-speed military aircraft. Initially they will be adapted to craft in the 500-600 mph range, but research indicates future speeds of twice this level can be attained. Called the turboelectric series, they will be used with turboprop engines ranging from 2500 to 20,000 horsepower ratings. Blades are of steel monocoque design, approximately rectangular in shape with square tips and a high activity factor (ratio of width to length).

—*A.H.A.*

Metalworking Outlook—p. 35 *Market Outlook—p. 119*

By GUY HUBBARD
Machine Tool Editor, STEEL

Fit Your Tools to the D

In the kaleidoscopic array of war material for which the defense department now is contracting are many products, units or parts which you can manufacture in your present plant, on your present machines, with your present personnel. Dig for them!

FOR a long time the U. S. has had the industrial equipment and manpower to turn out big volumes of war material in existing plants, on existing machines run by present operators. Nevertheless, war production both in World War I and World War II really did not get rolling until there had been widespread and ruthless conversion of existing plants, plus big expansion of those plants, plus creation of a large number of big, new emergency facilities characterized as "war babies."

This disorderly process imposes heavy peak loads on the machine tool, tool and die and construction industries; it immobilizes quantities of scarce metals and other materials; it overloads vital transportation facilities; and it involves inefficient use of manpower and migration of workers. While this goes on, thousands of military trainees may be marching with broomsticks. Must we go through all this again?

Don't Wait to Be Drafted—The answer is that we will not have to go through anywhere near so much of it if "civilian" industries—especially those of small and medium size—enlist now in the war production forces instead of waiting to be drafted. At the moment, the decision to shift from lucrative peacetime activities to the rigors of wartime activities may be a tough one to make. Bear in mind, however, that if your business is not definitely an essential one, you are living on borrowed time. "It's later than you think."

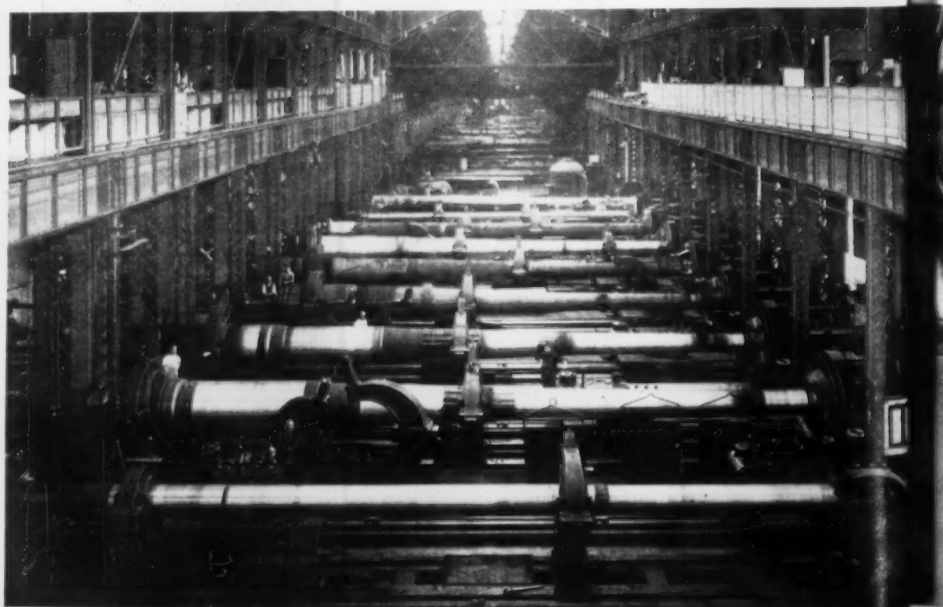
The ideal way to shift from peacetime to war production is to discover a place in the war picture for products identical to or similar to those you now are making. For instance, if you are making kitchen utensils, the logical thing will be to make kitchen utensils, mess kits, etc., for the armed services. There is no sense in parking your sheet metal working equipment in the back lot to make room for automatics to make bullet cores, when others already have the machines and know-how to make bullet cores. A lot of that kind of thing was done during the last war.

Stay Out of Washington—First thing *not to do* this time is to go to Washington. The contract or subcontract you need may be right in your own backyard. That is especially true of subcontracts, which at the moment offer the greatest opportunities to small and medium size businesses looking for quick action.

Lists of contracts awarded to date indicate a preponderance of them in dollar value has gone to large companies. This has been done with the understanding that these companies in turn will do everything in their power to extend subcontracting in order to bring as many smaller companies as possible into the act as fast as possible. Possibilities in this direction are indicated by the fact that nearly 4000 suppliers are expected to feed in parts to a company holding a prime contract for tanks.

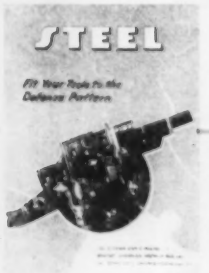
Wanted: Imagination—Conversations with a number of industrialists who already have been successful in getting subcontracts which fit their facilities indicate that lively "foot work," constructive imagination and good salesmanship have been largely responsible for their success.

Having hit upon propositions which might have possibilities—this by watching the newspapers and business magazines and through visits to local ordnance offices and other government purchasing of-



Before mechanized global warfare arrived, scenes like this in a naval gun factory at Washington 35 years ago typified "armament production." Heavy industries, government arsenals and highly specialized plants were the ones primarily involved. Widespread conversion of civilian industries to war output was not even contemplated

Defense Pattern



You can't turn gun barrels on a screw machine, and it is not very convenient to face mill aircraft engine cylinder heads on an open-side planer. However, there should be suitable armament jobs for all available machine if they are searched out and properly located in the jigsaw puzzle of production.

fices—they tracked down the key prime contractors.

Armed with necessary credentials, recommendations and lists of their facilities, they next have managed to get entree to prime contractors' plants to study drawings and pilot models. In some cases they have found units and parts which the prime contractor already had decided to farm out. In other cases they have spotted things which they are particularly well equipped to make and have talked the prime contractor into farming out those items.

These men have provided themselves in advance with documentary proof of their ability to carry through the proposed subcontracts. In addition to general descriptions of plant, facilities and location, they have worked out detailed lists of the nature, condition, size and number of their machine tools.

Proof in the Tooling—Also, they have carried detailed information as to their ability to make new tooling or to get it from outside tool shops. Ability to tool up quickly on the new work is likely to be a key factor in landing the orders.

Closely related to the foregoing is a description of the organization, with emphasis on ability of key personnel to make quick shifts to unfamiliar products.

Any company which can prove that it has done a smart tooling job on its present product has a definite edge on less ingenious rivals, even though its machine tools may not be of the latest vintage. If ingenious adaptations have been made of machines to handle unusual work, proof of this will be definitely helpful. With mounting scarcity of new machine tools, adaptations of older ones will play important roles in the war production program—especially in its initial stages.

Watch New Materials—A word of caution is in order, however, as to some of the new materials which are liable to be encountered, particularly in contracts involving jet propulsion and rocket components, armor plate, armor piercing projectiles and other details which must resist high temperatures, high pressures and high stresses.

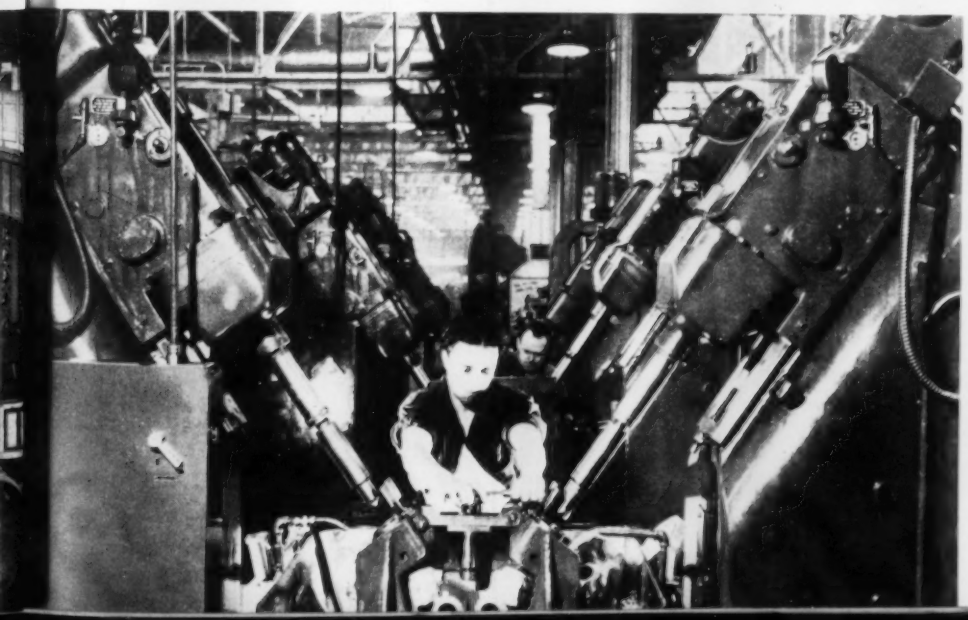
Don't tackle something you can't machine or heat treat with your present facilities—unless you know where you can obtain the necessary new equipment.

Another word of caution in regard to paperwork. Prime contractors will expect you to maintain adequate cost records which will stand up under government auditing. You must be prepared to give government authorities copies of your invoices to your customers and copies of those from your own suppliers.

Prime contractors naturally are concerned with integrity of subcontractors to whom they must entrust costly materials and tools as well as responsibility for deliveries timed to key into overall schedules. Reputation for integrity is more important than heavy capitalization.

Two principal things to bear in mind about the impending defense production program are: First, it will be bigger and more sweeping in effect than any previous one; second, it will involve a great many things which actually are rugged, nondecorative versions of civilian products—military motor vehicles are typical examples. This means that more companies than ever before will have to get into war work. By the same token, it means that more companies are potential producers—if the right jobs are placed with the right companies.

That is one big "if". The immediate solution is for big business and small business to combine forces so that the big jobs will be effectively subdivided and efficiently spread.



Arming for defense today involves production of vast quantities of material which lends itself either wholly or in detail to mass production in "civilian" plants—in many cases with minimum disruption of facilities. Here is an aircraft engine cylinder head drilling line operated by Chevrolet during the last war

COMPRESSION-SIZED TUBING

May Offer Machining Economies

Rocking dies with tapered grooves squeeze wall over mandrel, causing metal flow both longitudinally and circumferentially, improving surface finish and dimensional precision. Bimetal tubes can be processed from telescoped cylinders

ECONOMIES of using tube stock instead of bars or forgings in the manufacture of ring-shaped and similar steel parts are widely recognized. Advantages of cold-drawn mechanical tubing in quantity production are many, and there is a tendency to look upon all tubing as offering the same cost-saving possibilities. As a matter of fact, one class of tubing—cold-sized by compression—provides still greater opportunities for cutting machining costs. In this sense, it could be regarded as a new material which, compared to cold-drawn tubing, is available with closer tolerances, is finer grained, has uniform microstructure and has a depth of decarburization so shallow as to be negligible. These characteristics permit machining the tubing at higher cutting speeds and feeds with consequent machining cost reductions as high as 50 per cent.

To appreciate how such results are possible it is helpful to note the differences between cold drawing and the process of compression sizing. Cold drawing essentially involves drawing the tube through a die and over a mandrel in order to reduce the size of the starting tube and make it more accurate in outside diameter, inside diameter and wall thickness. The process also improves the surface finish and may harden the metal adjacent to the inner and outer surfaces through cold working, which can be either an advantage or a disadvantage, according to the use.

The compression sizing process, first introduced in 1929 by Tube Reducing Corp., Wallington, N. J., works the metal in the tube under compression and causes it to flow both longitudinally and circumferentially. Surface finish is improved without affecting surface hardness, and decarburization is decreased. Machining allowance on the outside diameter for cold-drawn tubing is 0.030-0.050-inch whereas the machining allowance on compression sized tubing is 0.018-inch. The latter is made in sizes from ⅞-inch up to 6 inches diameter. It has a definite economic advantage as a preliminary reducing and sizing operation prior to cold drawing. For example, where accurate, small tubes are required, say 1/16-inch in diameter, the compression process is used to bring the size under 1-inch diameter and this corrects for ovality and varying wall thickness prior to final drawing stages. The tubing costs somewhat more than hot-finished tubing and is comparable in price with cold-drawn material. However, this is a variable factor depending upon the steel analysis, surface finish and the tolerances required.

The process is a complete departure from the long used cold-drawing method in which the tube is drawn through a die and over a mandrel. It employs semicircular, grooved dies which rock back and forth over the tube. This compresses the metal of the tube against a mandrel which controls the inside diameter.

Grooves of the dies are tapered, one end being slightly larger than the outside diameter of the tube to be sized. As the dies roll over the tube, the gradually diminishing cross-section of the grooves results in a compression of the tube walls against a correspondingly tapered mandrel. Thus, the outside diameter, the inside diameter and the wall thickness are reduced and length is increased.

Suitable mechanisms feed the tube longitudinally through the reducing machine and give the tube a part turn on its axis so as to distribute the work over the entire circumference of the tube. These feeds are intermittent, being timed to operate after the dies have completed their forward stroke.

The intermittent rotation or increment feed of the tube, with each work cycle of the dies, is important, as it has a marked effect upon the accuracy of the finished tube. It results in what might be called circumferential step reduction, since successive areas around the circumference of the tube are worked, one after the other.

The step-by-step work around the tube wall tends to eliminate variations in wall thickness, ovality of bore or eccentricity of hole that may be present in the original tube. Thus, metal tends to flow from a thick section to an adjacent thinner section.

Another significant feature of the process is that the metal in the tube is worked by compression instead of under tension. For this reason the amount of work done in a single pass is limited only by the strength of the machine and the wear resistance of the dies. Relatively large reductions in size are not only possible but practicable. Thus, it is feasible to select for reduction a tube of large size and bring it to small diameter, with enough work done on it to secure the desired dimensional tolerances or finish, without the penalties of multiple draw-bench passes and intermediate heat treatments between passes.

Compression working also makes possible the sizing of tubes of many materials which cannot be drawn through a die. It simplifies the reduction of tubes of other materials which can be cold drawn but only with great difficulty and at high cost.

The smooth surfaces of compression-formed tubing

Cross-sections of two samples of cold-sized tubing showing how the rocking dies progressively thin the wall by compression. Piece at left is a typical special shape with a gear or spline bore, produced by tooling the mandrel to this contour. Other specialized shapes manufactured include bimetal tubes, inside upsets, closed ends, end tapers, and triangular, hexagonal or square bores

are the result of the manner in which the metal is worked. As the dies compress the metal against the mandrel they tend to iron out small irregularities of the outside and inside surfaces of the metal. The metal flows from high spots into indentations in the same manner as when it is forged or extruded. In addition, a certain amount of burnishing or planishing action takes place as the tube elongates under the pressure of the dies and creeps forward while in contact with the dies and mandrel.

All steels contain a certain amount of carbon which influences their mechanical properties and the effectiveness of heat treatment. It is therefore necessary that the normal carbon content be held to close limits in a steel of a given type if the character of the steel is to be maintained. However, some manufacturing processes tend to remove carbon from the outer layers of the steel, usually by oxidation during heating. This layer may be thick or thin depending on several conditions.

Decarburization is not necessarily objectionable. In boiler tubes it would not be noticed. In other classes of tubes it may be extremely detrimental. It might make the steel less machinable and thus slow down certain necessary finishing operations and it may interfere seriously with heat treating operations carried out for the purpose of hardening the surface metal, as for example, in the manufacture of ball bearing races.

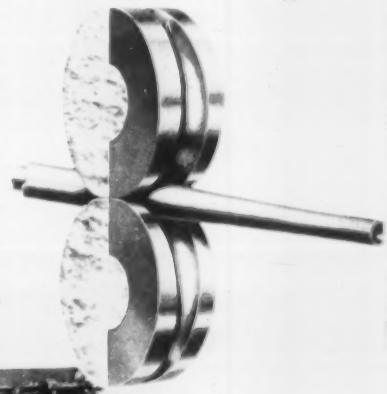
When decarburization is objectionable for any of these reasons, and when it cannot be avoided during the manufacture of a tube, it is eliminated by machining. Of course, the tubing must have sufficient stock in the wall to permit the removal of the decarburized layers. This may, and frequently does, necessitate the purchase of tubing having a substantially heavier wall than is wanted, the additional metal representing a double expense—in the first cost of the tubing and in the removal of the unwanted material.

Tubing made by any process may have either shallow or deep decarburization, depending in part upon the number and nature of heat treatments given the tubing and the extent to which the cross-sectional area of the tubing is reduced after it is decarburized.

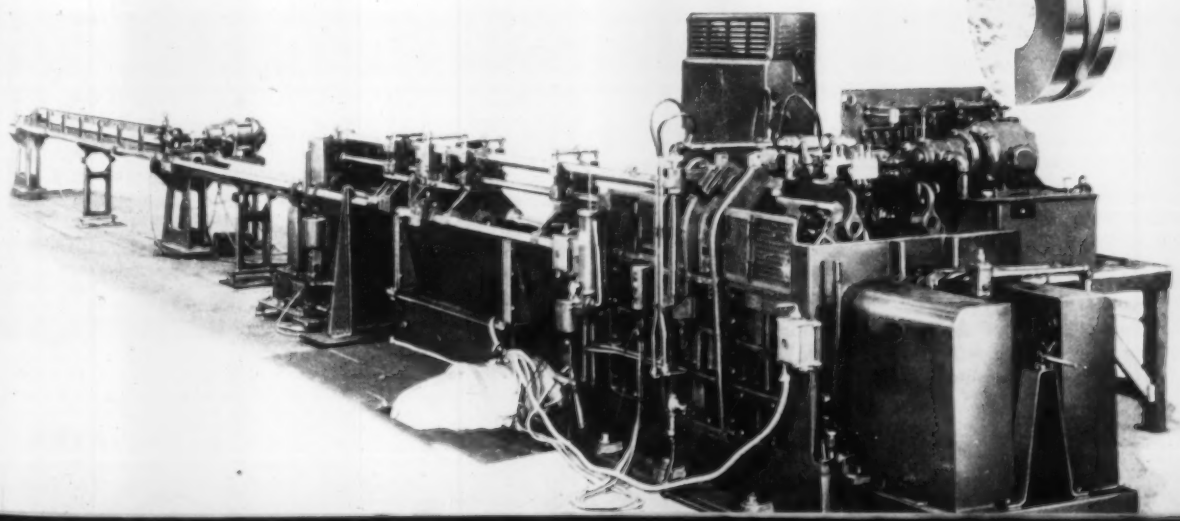
In cold-drawn tubing the decarburized layer can be worked down until it is so thin as to be wholly unobjectionable, but this may require several passes through the dies and these several passes may necessitate intermediate heat treatments which aggravate instead of correct the condition. This can be avoided by carrying out the heat treatment in a non-oxidizing atmosphere but it is not universal practice to do so.

Any decarburized surface of a tube which is compression reduced is almost always thinned down to such an extent as to be negligible. The precise reduction in the depth of decarburization will depend upon the percentage reduction in cross sectional area of the metal in the tube. This reduction is normally the equivalent of that resulting from three to five cold-draw passes, which are sufficient for this purpose. But this number of passes may not be necessary to obtain the other results for which cold-drawing is used. In other words, customary compression reduction in size is as great as that used in cold drawing for the purpose of reducing decarburization, and may even be greater. Furthermore, no intermediate heat treatments are necessary, so (*Please turn to Page* 80)

Right — Semicircular, taper-grooved dies are rocked back and forth over the tube, compressing the wall against a tapered mandrel which controls inside diameter



Below—Hot-rolled tubing is fed longitudinally through the compression sizing machine and given a part turn on its axis to distribute work over the entire circumference of the tube. Feeds are intermittent, timed to operate after the dies have completed their forward stroke



SULPHIDE PRECOATS

Facilitate Metal Forming

Chemical conversion materials are based on little-known lubrication factor relating to skin temperature of metals in sliding frictional contact

By JOHN A. HENRICKS
Vice President and Technical Director,
Devex Corp., Cleveland

A SERIES of new chemical conversion coatings has been developed for use in the extrusion and forming of metals, particularly ferrous metals. Licensed under pioneer patents of Fritz Singer Metalgesellschaft, and in a position to supply the phosphate or oxalate metal forming precoats developed in Germany, the writer's organization has specialized in a mixed sulphide coating which has a low coefficient of friction, as well as versatile means of application. The mixed sulphide conversion coating can be formed by vapor phase sulphurization in a controlled atmosphere during an anneal, by the thermal decomposition of a predipped coating, by the chemical conversion of oxide or scale, as well as by the usual immersion method in a hot aqueous solution.

The various chemical conversion coatings and their subsequent lubricant films are based upon a previously unknown lubrication factor brought to light by a classical research at Cambridge University by Bowden and his co-workers[1], in which it was established that the skin temperature at the junction between metals in dry sliding frictional contact approaches the melting point of the lower melting metal in the junction. Their work clarified the function of low melting point metals and alloys used for bearings, since such metals will melt at points of imminent seizure and thus restore a local hydraulic lubrication. This work likewise pointed out the inherent weakness of conventional organic lubricants since they may carbonize at temperatures well below the welding point of ferrous metals, and galling of the tool or scratching of the work will result. Certain novel lubricants have been developed and patented[2], employing various glass forming salts which melt and flow under extreme frictional loading to furnish hydraulic lubrication at temperatures above the carbonization point of organic lubricants. While such lubricants are of important value and are in widespread use in metal forming, the highest degree of metal deformation and drawing speed is only attained when the metal surface itself is filmed with an integral coating of a fusible metal or a fusible salt which will melt below the welding point of the tool or the work.

The Devex process has been in commercial application for over a year in the wire mill[3] of a special alloy producer in the Pittsburgh area, where the mixed sulphide conversion coating is being used to draw stainless steel and various tool steel analyses. In wire drawing at this plant, the pickled stock is coated in a hot aqueous solution of salts, after which the rod is given a light lime coat and drawn three 30 per cent passes through a box soap.

The process has likewise been in use for about a year in coating stainless steel and Inconel tubing[4] for drawing over a mandrel. The pickled tubing is coated in a hot solution of salts, rinsed and then lubricated by a dry film type lubricant.

The name "Devex" is derived from an abbreviation of "development and experimental" and the company is principally interested in those phases, leaving the chemical manufacturing part of the business in the hands of Clifton Products Corp., Painesville, O., one of the pioneer producers of beryllium and its salts.

Current development work of interest to the steel industry includes a method of utilizing waste pickle liquor as a reagent for forming conversion coatings on steel to be formed, as well as a source of fusible pigments for both hot and cold working steel, in order to solve the waste disposal problem concurrently with the mill lubrication problem. Another process, timely because of the acid shortage, is a scale conditioning method that converts iron oxides into nonabrasive pigments so that the initial acid pickle of the hot-rolled stock is eliminated and the conditioned scaled surface merely lubricated and drawn.

REFERENCES

1. Bowden and Ridler, Proceedings of the Royal Society, 1936, series A, No. 883, p.154.
2. Orozco and Henricks; U. S. Patent 2,469,473, May 10, 1949.
3. Wire mill, Universal Cyclops Steel Co., Bridgeville, Pa.; R. G. Hobson, metallurgist.
4. Tube mill, Republic Steel Corp., Steel & Tubes Division, Cleveland; Lynn Brainard, finish superintendent.

EYE SAFETY

. . . Man-hour and Dollar Stakes are High

By STANLEY C. HERBINE
Willson Products Inc.
Reading, Pa.

EYE INJURIES in 1951 are going to cost U. S. industry many millions of lost man-hours and millions of dollars in direct and indirect costs. Accidents will cost some workers their sight and inflict great suffering on others unless management takes steps to protect employees' eyes. Current influx of untrained workers into defense plants emphasizes the necessity for establishing good eye safety practices.

Even in safety-conscious metalworking and metal-producing plants, accident hazards are increasing. The stepped-up tempo of production is taking its toll. A survey by the National Safety Council of all types of accidents over a three-year period shows that metalworking, even with established safety programs, stands below the national average of all industries in both frequency and severity of accidents.

Statistics are not available on the ratio of eye injuries to total compensated injuries in the metalworking field alone. But the average frequency rate of disabling eye injuries for certain types of metalworking operations, as in foundries, is 3.99, or about six times higher than the national average ratio of 0.67 per million man-hours in industry as a whole.

The National Society for the Prevention of Blindness has prepared a manual and appraisal form on conservation and utilization of eyesight in industry. It will help plants to make an industrial self-appraisal of the need for an eye safety program. This self-appraisal form will quickly show any deficiencies in the plant program.

As a preliminary measure, the manual suggests checking the eyesight of all workers in the plant to determine visual capacity, and to place the worker in a job commensurate with his visual skills. Next step in determining the need for an eye safety program is to check plant safety practices listed in Table I.

Chart Jobs and Protection Needed — Experience shows that 90 per cent of all eye accidents in industry might have been prevented if proper eye protection had been provided. It is frequently desirable to chart the jobs which require protection, and the proper type of protection for the job. Any unprotected hazards are exposed in a survey of this kind.

With so many types and styles of eye protection on the market, it is often difficult to know which equipment provides the best protection for the job. The selector chart on page 79 shows the proper type of eye equipment for certain hazards. The chart is based on the requirements of the American Standard Safety Code for the protection of head, eyes, and respiratory organs.

Federal specifications GGG-G511A control the density of filter glass. These specifications, set up by the National Bureau of Standards, indicate the shade number acceptable to filter out injurious rays for certain operations to within safe limits, while still admitting as much light as is necessary for clear vision. In these specifications, glass density is graded according to shades 3-14. See Table II.

How to Sell Management—The strategy of selling

TABLE I
CHECKLIST FOR EYE CONSERVATION PRACTICES

1. What eye injuries occurred in your plant in the last year?
2. How much did these injuries cost?
3. Have hazards been guarded at the source as effectively as possible?
4. Is every worker exposed to injury from large or small flying particles provided with impact-resisting goggles of the proper type?
5. If these hazards include glare (as in welding or cutting), are the men provided with tinted lenses of the proper shade for that type of work?
6. If corrosive or poisonous fumes from chemicals are present in any operation, are chemical cartridge respirators and gas masks provided?
7. Is the illumination in your plant up to the standards recommended for general lighting, and for illumination at the point of work?
8. Review the reports of eye accidents in your plant. Can you find one case where the accident could have occurred if eye protection had been worn? In other words, have you any industrial eye hazards for which existing eye protection on the market is not adequate?

TABLE II
FEDERAL SPECIFICATIONS FOR DENSITY OF FILTER GLASS

Shade No.	Used For Protection From
1.5-3.00	Glare, sunlight reflected from snow, water, roadbeds, roofs, sand etc. Also for stray light from cutting and welding and for protection in metal pouring and furnace work.
4	Same use as shades 1.5-3.00 under more intense conditions.
5	Light gas cutting and welding; light electric spot welding.
6-7	Gas cutting; medium gas welding; arc welding up to 30 amp.
8	Heavy gas welding; arc welding and cutting when using over 30, but not over 75 amp.
10	Arc welding and cutting when using over 75, but not over 200 amp.
12	Arc welding and cutting when using over 200, but not over 400 amp.
14	Arc welding and cutting when using over 400 amp.

the program to management is something each safety director must develop for himself. No one can tell him *how* to do it. That knowledge can be developed only by on-the-spot observation and understanding of the people involved. But some suggestions on what to say may be helpful.

Management usually wants to know four things: (1) What is the program? (2) How much will it cost? (3) Why do we need it? and (4) can we make it work?

Reasons for developing an eye safety program are usually discovered when determining the need for the program. Accident statistics, unprotected hazards, compensation costs speak louder than words. Reports on how much eye injuries in the plant have cost during the past year and how much adequate safety equipment would cost usually show that it's cheaper to be safe than sorry. If a clear-cut, well-organized presentation of what the program will cost and what it will save is presented to management, half the battle is won.

Average cost of an eye accident is $328 per injury for compensation and medical care. Your own plant figures will be more meaningful and more accurate than these average figures, and you may be surprised at the amount of money spent in eye accident costs, compared with the estimated cost of putting the safety program into practice.

Consider also the cost of installing proper illumination. In some cases this might be only a change to a higher wattage light bulb; in other cases it might mean moving the source of light to a position where it does not cast shadows on the work.

Dehazardize Your Plant—Other points to check in the preparation of an eye safety program and its cost concern elimination of hazards at their source. These include better methods of operation, guards and shields for machines, exhaust hoods for dust, gases and fumes, and purchase, replacement and repair of all personal safety equipment.

The cost of an accident is incomplete without some estimate of intangibles. Cost factors to be considered should also include lost-time on employees who assist the injured man, lost time apart from compensation, overtime resulting from an accident, time spent by others in straightening out the problems of an accident, such as filling out accident forms, reduced production due to incapacity of injured man, cost of time spent in training a new employee, etc.

After showing management the dollars-and-cents value of establishing an adequate safety program, an outline of a plan to make it work should strengthen its acceptance. In many plants, goggles and other protective equipment are bought but they are not used. Management has become somewhat indifferent to buying material that is hung on a hook, and then paying compensation costs besides. A sound method for operating the program will help to dispel this attitude, establish more firmly the need for the program, and build confidence in its success.

Key Man: Your Foreman—In addition to the safety director, the key man in the operation of the program is the shop foreman. If the safety director sells the first-line supervisor, a big part of the problem is solved. It is he who puts the program in motion—though he needs co-operation from the workers to keep it rolling. He is the one who usually sees that the men are:

1. Equipped with the proper protective devices
2. Instructed in their proper use
3. Familiar with the safety rules
4. Reminded of rule infractions.

Lowest frequency for eye injuries is in those plants where the foreman acts as safety monitor. The

National Safety Council finds that "the average frequency rate for all companies which placed responsibility for enforcing goggle rules on the foreman was 0.40. Companies disciplining violators by discharge had a rate of 0.45, while companies using less severe disciplinary measures had a rate of 0.65. Companies with no enforcement plan had rates substantially higher."

$1000 per Eye—Chief reasons for failure to conform to a safety program are: (1) Carelessness and (2) discomfort.

An approach to carelessness can be made through providing incentives to be careful. Safety awards are used in some plants as incentives to careful operation. At one plant the men are awarded safety shoes every year, if the plant completes the year with-

METALWORKING OCCUPATIONS REQUIRING USE OF EYE PROTECTION

For Protection From:	In Jobs Such As These:	Select This Eye Protection:
Relatively large flying objects, such as rivets—chips, metal chips, fragments from machine tools.	Chipping, finishing iron and steel castings and forgings, metal lathe work, or metalworking jobs using tools subjected to repeated blows such as chisels, swages, flatters, fullers, and all breaking-down tools which are not carefully watched and dressed and groomed.	Chief requirements of goggles are strength of lens, lens container and frame, and sideshields—and comfort to the wearer. Frames should be lightweight, smooth, and not rust or corrode under sterilization. Safety spectacles with hardened lenses and side shields. Heavy-duty cover-all cup goggles, designed especially for workers who must wear prescription lenses. Heavy duty cup goggles with hardened lenses.
Dust and small flying particles.	Scaling and grinding of metals.	Goggles must enclose the eye completely, but they need not be especially strong, since the impact against them is not so great. Cover-all type of plastic one-piece lens. Safety spectacles with hardened lenses and side shields. Composition cup cover-all goggles, with indirect port ventilation.
Metal sparks and spatter.	Electric spot and butt welding where there is no exposure to radiant energy.	Full-face plastic shield. Cover-all type of plastic one-piece lens.
Splashing metal.	Casting of hot metal, and dipping in hot metal baths; babbitting; pouring of lead joints, for cast iron pipes. In terms of frequency and severity this is one of the most serious of all industrial eye hazards.	Requirements are that the lens will withstand a moderate blow of molten metal, and the lens container will hold the cracked lens in position. Plastic visor. Cover-all plastic one-piece lens. Composition cup safety goggles with hardened lenses. Wire screen visor with wide flare. Safety spectacles with side shields and hardened lenses.
Gases, fumes, and liquids entering the eyes.	Handling of acids and caustics and other corrosive chemicals, dipping in galvanizing tanks and pickling tanks.	Cover-all goggles with hardened lenses for prescription lens wearers. Wide flare plastic visor protective shield. Composition cup safety goggles with hardened lenses. Rubber mask goggles, with indirect screened ventilation ports and wide vision hardened lenses.
Reflected light and glare.	Exposure to incidental glare from furnaces, working near or adjacent to welding operations, etc.	Safety spectacles with Willsonite green lenses, with or without side shields. Composition cup safety goggles with green lenses with side ventilated lens retaining ring and side screen.
Injurious radiant energy when a moderate reduction of intensity of the visible radiant energy is desired.	Oxyacetylene welding and cutting; and testing of lamps involving exposure to excessive brightness.	Scarfing shield (V-scarfing). Cup goggles with welding glass lenses and clear cover glass to save the welding lenses from pitting, and indirect screened ventilating ports to prevent fogging of the lenses, and exclude injurious flashes, hot metal, and sparks. Cover-all welding goggles with special welding lenses, and cover glass clear lenses, and indirect screened ventilating ports. Chip-weld goggles. The welding glass lenses flip up to leave eyes protected by clear hardened glass lenses, ready for chipping after welding.
Injurious radiant energy when a large reduction of the visible radiant energy is desired.	Electric arc welding and cutting, irradiation with ultraviolet light, hydrogen welding, tending electric arc furnaces, open hearth, Bessemer, crucible, and blast furnace steelmaking.	Scarfing shield, with welding filter glass and clear cover glass. One-piece shell welding helmet with flip-front welding section which can be raised for quick inspection of the weld, and a stationary section fitted with clear, laminated glass for observation of the weld. Fabricated shell welding helmet with stationary welding glass section. Melters' goggles with blue filter lenses in a shade suitable to give furnacemen the proper degree of color to which their eyes are accustomed. (Melters' blue filter glass is available in a variety of goggle styles).

out a lost-time accident. This plant has currently passed more than 1400 days of operation free from lost-time accidents.

In addition the company keeps workers reminded of safety practices and builds safety habits through many different forms of promotion. Leaflets put out by the National Safety Council are distributed periodically to the men. Bulletin board posters are doing their job of helping to overcome carelessness and make workers more conscious of the need to wear their goggles. They are now in use in more than 70,000 plants in the United States.

If workmen could realize what eye accidents cost them in lowered earning capacity, they might be more careful. The strong language of dollars and cents usually makes an impression. Few workmen realize, for example, that the maximum compensation for total loss of vision in *one* eye is less than $2000 in most states, and as low as $1000 in some. Maximum compensation for the loss of *both* eyes in most states is $6000. Because of reduced earning capacity, a workman loses that much in salary within two or three years after the accident. In steadily decreasing pay for the rest of his life, he loses much more. At the very least, most workmen are risking a 33⅓ per cent cut in salary for the rest of their lives every time they risk an eye injury.

Train 'Em Young—The indoctrination of new workers is an important part of keeping a safety program alive. The new employee's earliest hours and days at the plant offer an opportunity that is priceless to impress him with the safety rules and the value and necessity of observing them.

But perhaps the most important part of a safety program are regular safety meetings—on company time—where the employees themselves can make suggestions for better and safer plant operation.

A more drastic practice used to make the safety

program work is a clear-cut understanding by the employee that safety equipment must be worn as a condition of working in the plant. No use of safety equipment—no job. In some plants mandatory use of safety equipment is written into the union contract.

Equipment Must Be Comfortable—Complaints like: "I can't see as well with the glasses as I can without them;" "The glasses hurt my nose and ears;" "They are too hot;" "The sweat runs down my goggles and I can't see through them" can be reduced or entirely eliminated if the safety equipment is selected with due care for the wearer's comfort, and is kept in first-class condition. Fortunately, it's not hard to find comfortable goggles for almost everyone. Goggles are now available in a wide range of bridge and nose sizes to fit all types of faces. New lightweight plastics, give sufficient protection for many semi-hazardous jobs. Ventilation ports in many models keep glasses from steaming or fogging, and make it as easy to see with goggles as without them.

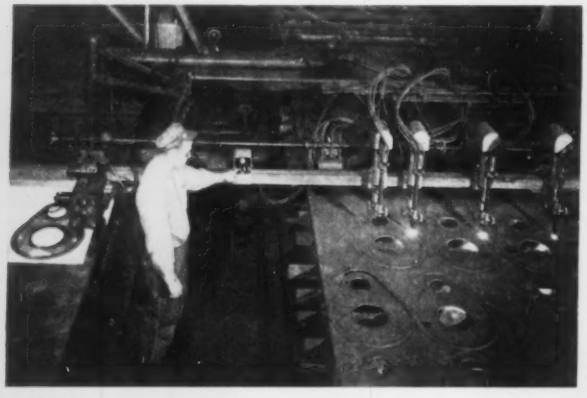
Goggles must be properly fitted. In some plants this is done by the plant optician; in others, by the safety director or supervisor. Every time it's done, it provides an opportunity to sell safety to the worker.

To keep goggles comfortable, they should be regularly reconditioned, washed and sterilized. Usually this is done at a central supply room at regular intervals. If goggles are issued to any other man, they should be cleaned with germicide.

A man will not use goggles he cannot see through. Many safety directors provide cleaning fluid and soft, clean cloths or tissue paper for drying. Another good thing to provide is antifogging compound, to be used when atmosphere conditions cause fogging of the lens. Plastic cleaner keeps plastic equipment clean and minimizes scratches.

Careful attention to details of this type go a long way toward providing comfortable safety equipment and help make the safety program work.

Motor Torches Cut Uniform Shapes



SMOOTH AND UNIFORM shapes are cut by motorized torches added to the shape-cutting machine in United States Steel Supply Co.'s Chicago warehouse. Made by Air Reduction Sales Co., New York, it is reported to be the first pantagraph to combine the torches with an electric tracer. The operator uses a switch on the electric control panel to maintain proper spacing between torch tip and plate surface during operation

Compression Sized Tubing

(*Concluded from Page* 75) there is no liability of the tube being decarburized while undergoing treatment for decarburization.

Variables with which the manufacturer is forced to contend include:

1. Degree of anneal of the starting tubes; some may be fully annealed, others only partially so.
2. Grain structure of the starting tubes. It is, of course, possible to give the starting tubes a spheroidizing anneal, but this is a long and costly annealing cycle except for the high-carbon steels such as SAE 52100.
3. Segregation of impurities within the steel itself will vary within considerable limits.
4. Straightening operations on the starting tube which is stressed at the sections where it is out of true will result in higher mechanicals to start with which are, of course, magnified by the compression sizing process.

For the foregoing reasons it would be much safer to count on starting tubes of SAE X1020 having a yield strength of about 41,000 psi increased by compression sizing to 80,000. Actually of course many of the tubes will have a yield strength in excess of 100,000 psi, but this should be used as an added factor of safety rather than a predicted strength.

Bimetal tubes are produced by the compression process by passing telescoped cylinders through the machine. Thus, either the outer or inner surface may be of inexpensive carbon steel and the other surface of copper or a copper alloy. Similar composite tubing can be made of stainless steels, nickel and other metals to meet special requirements of cost, tensile strength, resistance to corrosion or oxidation, or heat transfer. The compressing-sizing operation of the telescoped tubes presses together the adjoining surfaces of the inner and outer tubes in such a manner as to avoid pockets or voids—this is important for heat-transfer tubing since it assures uniform and predictable heat flow.

Weight Loss Kept Low

Weight losses only about half as great as those of copper steel were shown by Cor-Ten, U. S. Steel Corp.'s principal high strength low alloy steel, in comparative tests on railroad hopper cars started in 1934 and recently concluded. Results of the long-term tests have been tabulated and analyzed in a new publication by the company. The report presents graphs and tables of the relative weight losses of the two types of steel in freight car bodies.

To insure identical testing of the two alloys, U. S. Steel hopper cars in coal hauling service were rebuilt in November, 1934, with one-half the body made of Cor-Ten and the other half of copper steel sheets. Each sheet was carefully weighed before installation. After 11 to 13½ years of service, three cars were retired from service and dismantled. After paint and rust was cleaned from test sheets they were weighed again. Copper steel sheets lost twice as much weight as the Cor-Ten sheets. Similar tests conducted by the Bessemer & Lake Erie Railroad over 13 years showed corresponding results.

MESTA Forgings

The illustration shows a forged steel rotor shaft for a turbine driven generator installation at Grand Coulee Dam. The shaft was manufactured complete, from raw materials to finished product, in the Mesta Shops.

Mesta Forge Shops produce carbon and alloy steel forgings in all sizes required by industry, including crankshafts, marine parts, rolls, pinions, pressure vessels, pump blocks, table rollers, coupling halves, gears, spindles, and many others.

Write for descriptive forging literature.

DESIGNERS AND BUILDERS OF
COMPLETE STEEL PLANTS

MESTA MACHINE CO.

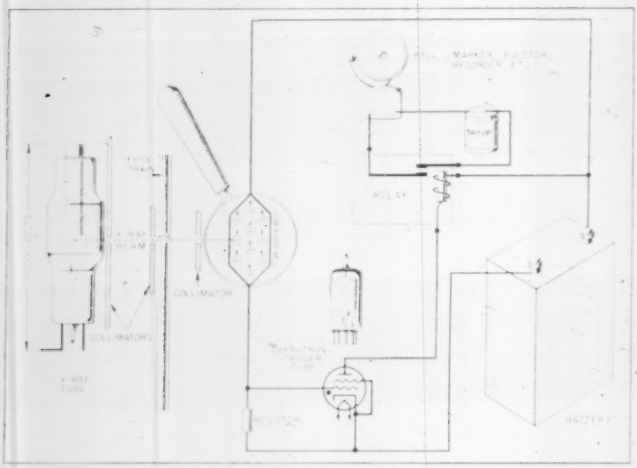
PITTSBURGH, PENNSYLVANIA

Crystal Amplifier Opens New Fields For Low-Power X-Ray Inspection

A DISCOVERY promising to make possible for the first time the high-speed, automatic X-ray inspection of thousands of industrial products has been announced by the General Electric X-Ray Corp., Milwaukee.

Purpose of inspecting such products, of course, is to increase their soundness and safety, and in general to improve quality and help develop better production processes.

Heart of the new inspection system is a small crystal of cadmium sulphide, known as a semiconductor, which can be grown in size from a fraction of a millimeter to several millimeters in cubic size. When excited with radiation, it acts as an amplifier tube,



Circuit diagram showing how blast fuse discontinuity is signaled by X-ray crystal detector system

releasing streams of electrons which can be used to operate various types of mechanisms.

The crystals amplify the energy they receive 1,000,000 times. On an area-for-area basis, they are over 1,000,000 times more sensitive to X-rays than are ionization chambers commonly used to measure X-radiation, and over 1000 times more sensitive than photoelectric cells, such as those used in electric-eye applications.

The crystals are extremely sensitive, are stable and instantly respond to variations in the intensity of X-rays. Because of the 1,000,000-to-1 gain, the crystals do the work which hitherto required a much more complex system of vacuum tubes and amplifiers, while at the same time allowing the use of low-intensity X-rays.

A prototype of the new system is about to be delivered for a test on an ordnance production problem, and pilot laboratory models have been built to inspect rubber heels, the product level is baby food, beer, soup and other canned and packaged products, and the continuity of the powder trains used in blasting fuses.

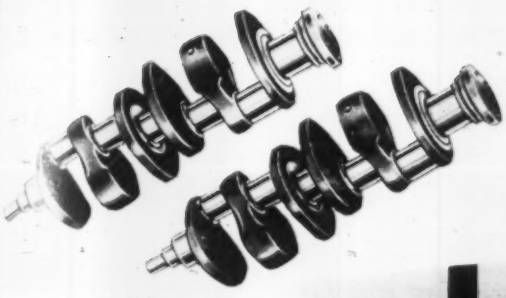
The crystal-electric method promises to perform at unprecedented speeds, ranging as high as 600 units per minute in the case of canned foods and liquids. Operating as a sort of industrial "slave eye", the crystals may solve many kinds of inspection problems, including: Controlling and checking product level in containers; detecting voids, cracks, cavitation and variation in material thickness in a wide variety of homogeneous materials; checking for absence, misplacement or misalignment of inserts and other internal parts, and even eventually spotting foreign particles in certain foods, metals and other products.

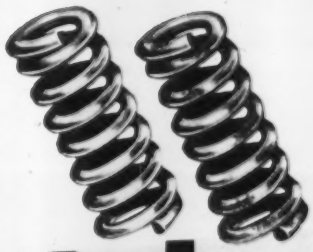
Laboratory model of equipment needed for inspecting the powder trains in blasting fuses requires only a small X-ray unit operating at approximately 20,000 volts and 1 milliampere, plus a small crystal in a holder, a control box with one or two vacuum tubes, and a relay that can operate a device to call attention to the defective area. In this application, a $\frac{1}{8}$-inch void in the powder train inside a $\frac{1}{4}$-inch diameter cord has been detected with the fuse moving at the rate of 60 feet per minute.

The relay could be made to do almost anything automatically—operate a meter, chart a graph, work a rejection lever to remove the product from the line, ring a bell, flash a light, dab red paint on the faulty part, or actually stop an entire production line until the faulty product or process is run down. This type of operation promises to reduce both the operating cost and the manpower required for a given inspection operation.

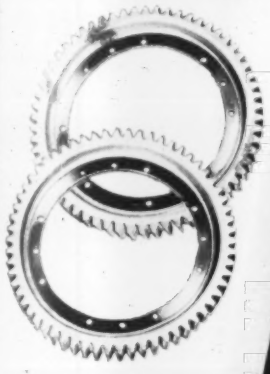
Although the crystals used to detect small defects are small, they may be grown to larger sizes, and batteries of crystals may be arranged so as to integrate a large area. In general, the laboratory models do not use a large "spray" of X-radiation, as do conventional X-ray machines or fluoroscopes, but rather narrow pencil-like beams. In some installations, this may mean that the radiation hazard will be reduced and the cost of building special concrete or lead partitioning either would be reduced or eliminated entirely.

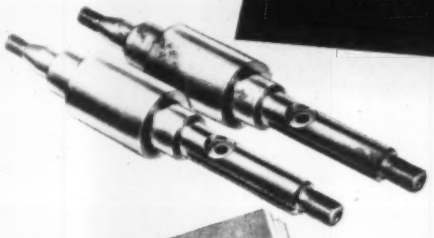
In a special press demonstration at Milwaukee, Feb. 8, one of the jobs which was done by the crystal was the charting of a graph, showing internal condition of a wide variety of products. For instance, a 1/16-inch diameter "pipe" or cavity in a steel rod $1\frac{1}{2}$ inches thick was revealed by a "blip" in the graph line resulting from the crystal receiving an extra "sock" of X-rays as they passed through the discontinuity.





do you have RUST in your plants?





STOP RUST WITHOUT OIL OR GREASE

Have you heard about the new way of packaging parts and machines without the use of oil or grease-type rust preventive coatings? Do you know that now you can receive parts from your suppliers that are "factory-fresh"—sparkling clean—free of rust or grease—ready for immediate assembly or use? Send for this important book of case histories which shows you how others have eliminated the slushing and degreasing problem—how you can apply this new method in your own operations. No obligation. No cost. It's from Nox-Rust—Headquarters for Rust Preventive Products.

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High-Pressure Boiler Plant Equipped for Smokeless Operation

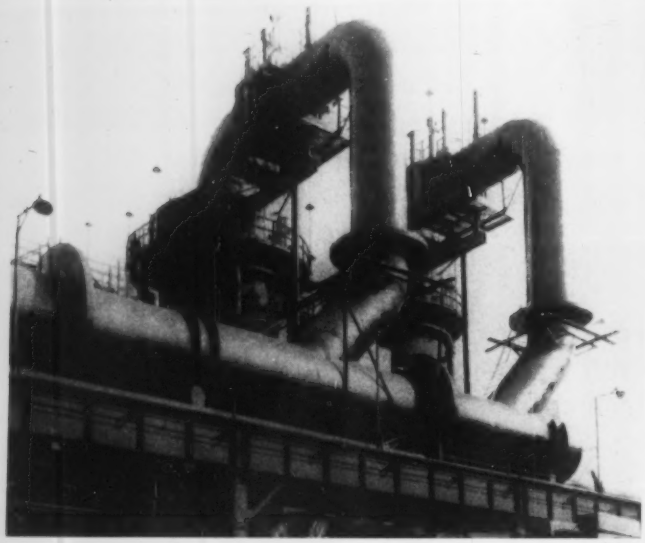
A major step toward smoke control at National Tube Co.'s National Works is the installation of two modern gas washers and a companion setup of electrostatic precipitators for cleaning blast furnace gas used to fire the new five-unit boiler plant. Dust collectors virtually eliminate fly ash coming from the boiler stacks when coal is used for fuel

SMOKELESS stacks on the new boiler plant of National Tube Co.'s National Works, McKeesport, Pa., are not a sign of slack business but of industry's cooperation with the community smoke control program. Designed to produce a minimum of fumes and solids in waste gases, the new boilers are fired with gas from the plant's four blast furnaces, with pulverized coal as an auxiliary fuel.

An average of 17.4 million cu ft of gas an hour is produced by the four blast furnaces. Of this amount, approximately 69 per cent, or 12 million cu ft is available for use in the new boiler house.

Low Dust Content—Gas cleaning is accomplished in two modern gas washers and two electrostatic precipitators. A main 9 feet in diameter conducts the gas from the furnaces to the washers. Based on a capacity of 230,000 cu ft of gas per minute, the washers reduce the dust content to 0.25 grains per cubic foot by passing the gas through multiple fine sprays of water.

From the washers the gas passes to two double-compartment precipitators. Here it flows through a high-tension electrical field, becoming part of the electrical circuit, with the result that the solids are precipitated through the action of electrostatic charges. The precipitators reduce the dust content of the gas to 0.01 grains per cubic foot.



Two modern gas washers and companion setup of electrostatic precipitators for cleaning blast furnace gas used for firing high-pressure boiler plant

Dust in the precipitators is washed away constantly and flows by gravity to a 90-foot diameter multiple-trough thickener. The sludge effluent from the wet washers is pumped to this same thickener.

Settled solids from the thickener are pumped directly to a drum-type vacuum filter which can produce 172 tons of filter cake in 24 hours. This cake, with a moisture content of 25 per cent, is scraped from the drum and dropped directly into cars for removal to the ore stock pile for recovery by sintering.

Coal for the new unit is handled in the conventional manner. First lifted from barges by a coal tower, it passes through a crusher to a storage hopper, then is fed by means of seven rotary-vane feeders, with a capacity of 150 tons an hour, to a belt conveyor for discharge into a bucket elevator.

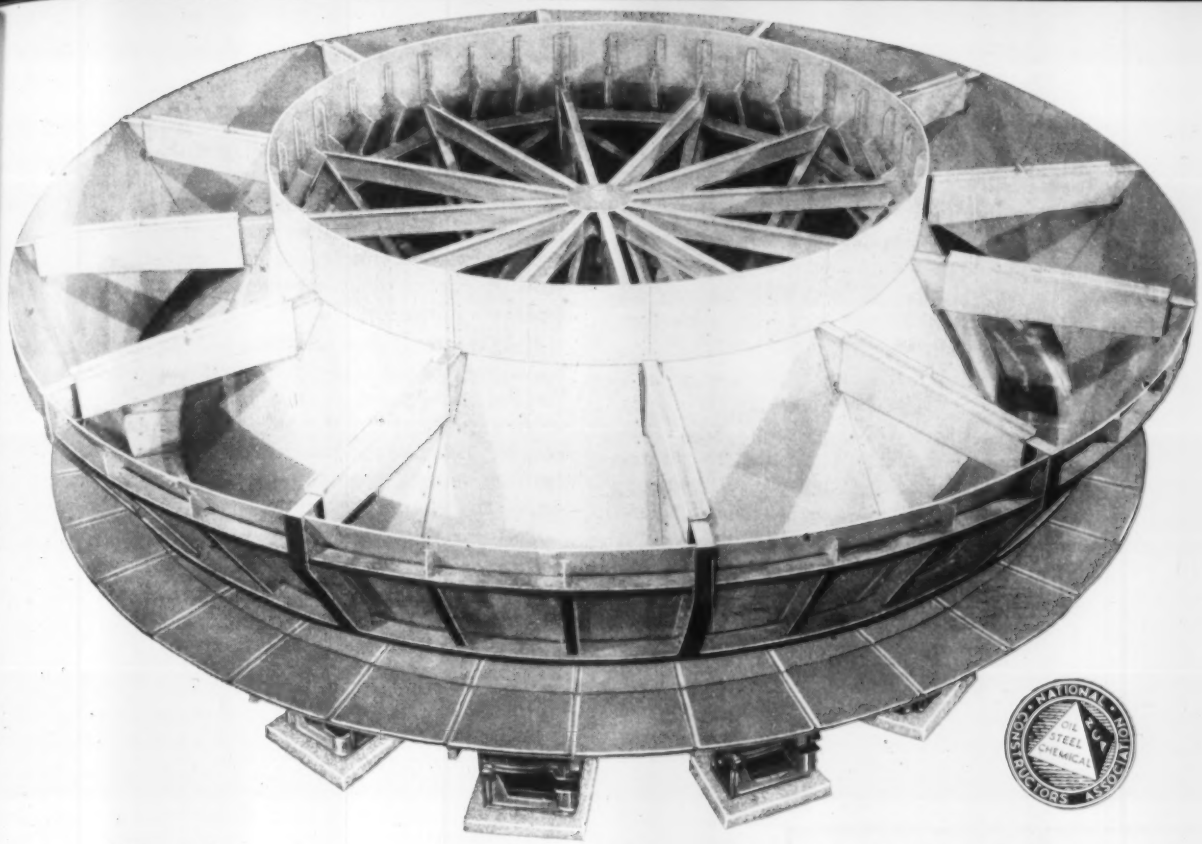
From the elevator the coal discharges to a belt conveyor equipped with a tripper and mounted over the boiler house coal bunkers. Removal of tramp iron is accomplished by two magnetic pulleys on the conveyors.

From the boiler house bunkers, the coal passes down through spouts to automatic scales, thence to the feeders and on to the pulverizers. Each boiler is equipped with its own scale, feeder, and pulverizer.

Fly Ash Controlled—Gases and fly ash emanating from coal are controlled by dust collectors designed to meet the requirements of the new Allegheny county (Pittsburgh and environs) smoke control ordinance. The ash-handling system is of the conventional vacuum type with a capacity of 20 tons per hour. It collects from ash hoppers, boiler soot hoppers, dust collector hoppers, and stack hoppers, and delivers into a 100-ton capacity silo through a cyclone and air washer. Ashes from the silo are discharged into either trucks or cars by a dustless unloader.

Five, two-drum boilers with fully water-cooled furnaces constitute the new unit. When burning gas, the steam output of each boiler will be 175,000 pounds an hour. With output of steam from coal limited to the use of a single pulverizer for each boiler, the capacity will be 125,000 pounds an hour.

Each boiler is furnished with a 60-inch diameter upper drum and a 42-inch diameter lower drum pro-



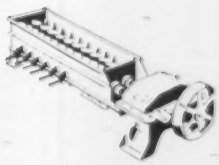
McKee-designed ROTARY AIR COOLER

COOLING of sinter by the usual method of water quenching is damaging to the physical structure of sinter. A recently developed means of cooling the sinter slowly by air in a rotating hopper has proved much more satisfactory.

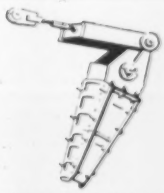
We are primarily engineers and contractors—not equipment manufacturers—and our policy is to procure and install the *best equipment available*, regardless of make. In this case is was necessary for us to obtain a license to use the air cooler and modify its designs to meet our requirements.

With a 300-ton holding capacity, this device permits ample time for annealing and cooling and avoids the degradation and shattering caused by water quenching. It improves the size and quality of sinter and reduces the percentage of fines. Steam and other undesirable conditions resulting from the use of water are eliminated. Air-cooled sinter can be distributed by conveyor belt direct from the cooler to any desired location without use of cars.

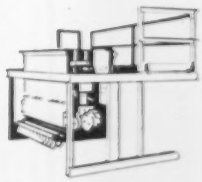
Other exclusive McKee equipment developed to meet definite needs in Sintering Plants:



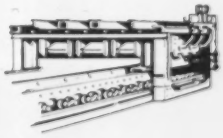
PUG MILLS



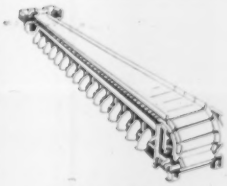
SWINGING SPOUT



AERATING FEED HOPPER



IGNITION FURNACE



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viding a heating surface of 13,800 sq ft. The water-cooled furnace tubes add an additional 4407 sq ft of heating surface. Furnace volume is 14,300 cu ft.

Units Tangentially Fired—Because of availability and past satisfactory performance, tangentially fired units were selected. The boilers are equipped with two-section tubular-type air preheaters with a total heating surface of 16,500 sq ft to provide an over-all efficiency, at full load of 75 per cent with blast furnace gas and 84 per cent with coal.

Coke oven gas pilot burners are installed in each unit and are capable of producing about 20,000 pounds of steam an hour at full valve opening. Superheat temperature from each boiler is controlled by an automatically operated atomizing, spray-type desuperheater in each boiler steam discharge outlet. There are no surface condensers available to provide pure water for this purpose, so the condensate from the high and low-pressure heaters is used.

While only five boiler units are installed, space is provided in the seven-story building for a sixth unit at some future date.

To minimize maintenance and operational problems, all driven units possible are located on the ground floor. All feed water heaters and pumps are concentrated in one bay at the east end of the boiler house.

Steam Turbine Drives—Most auxiliary units having high power requirements are steam turbine driven with electrically driven standby units for flexibility of operation and protection against failure. Pressure for driving the auxiliary turbines was determined from heat balance studies.

Pulverizer drives are an exception, for it was felt that steam requirements from coal are so low (approximately 10 per cent of the total) that only a drastic failure of all five units could affect plant operation. As a result, all pulverizers, feeders and scales are motor-driven.

With the exception of the coal-handling system from coal tower to pulverizers, all units are broken up into duplicate sizes and are so cross-connected that only a major failure can seriously affect plant production. Pumps are also installed in duplicate sizes of partial plant capacity, with an extra unit as emergency standby.

Coagulants Hasten Settling—Clean water for the boilers presented a problem, as no condensate return can be anticipated in the immediate future. Raw river water from the Monongahela is the only available source. To solve the problem, the company uses seven existing settling basins and hastens the settling process by the use of coagulants.

The new water softening plant is of conventional design except for size as related to steam output. Because of the varying qualities of the make-up water and consequent varying blowdown from the boilers, the water-softening plant had to be designed larger than usual

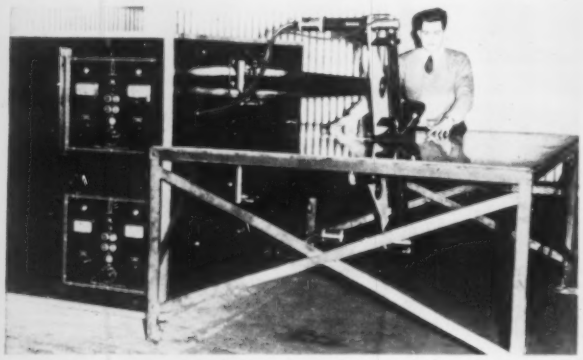
The treating plant is of the lime-soda, hot-process type, effecting silica and hardness reduction in reaction tanks, followed by filtering and stabilization before delivery to de-aerating equipment. There are three softening tanks operating at 25 pounds pressure and with a maximum capacity of 1,875,000 pounds per hour, based on 90-minute retention time. Normally, only two will be in use as softeners and the third will be used as a softened water storage tank.

Fourteen Filters—Fourteen pressure-type filters are installed immediately west of the water softening building. Three lime-soda mixing tanks and pumps, two sulphite mixing tanks and pumps, two phosphate mixing tanks and pumps, and one acid tank and pumps constitute the auxiliaries. Each boiler is furnished with its own phosphate feed pump, arranged for timed phosphate feed and automotic flushing of the lines, however.

All chemicals are handled from cars by means of skids and a storage-battery lift truck, up an elevator and down a ramp to the second floor of the water-softening plant. Bags of chemicals are opened on this second floor and the contents poured through a pipe to the proper mixing tanks. The mixing tanks are served by a separate ventilating system discharging into a small cyclone collector from which waste materials can be recovered.

Indicating and recording instruments and control stations throughout the plant keep the staff thoroughly informed and in control of operating conditions at all times.

Tin Plate Coating Gaged Rapidly



NO WASTE gaging is being performed at U. S. Steel Corp.'s Irvin Works by a tin metallurgical department employee operating a x-ray coating thickness gage made by North American Philips Co., Mt. Vernon, N.Y. Positioning the sheet in nine different spots takes 30 seconds. Scanning arms above and below table measure tin plate thickness which is recorded on a printer at back of panel. Similar installations are in operation at the corporation's Gary, Ind., works and at its subsidiary Tennessee Coal, Iron & Railroad Co.

Agent R-313 Transferred

Anhydrous thermosetting sealant compound, agent R-313, used for manually bonding dissimilar and similar materials such as glass, Neoprene, and ferrous and nonferous metals, is now being made by Carl H. Biggs Co., W. Los Angeles, Calif. The agent, formerly made by Western Sealant Inc., is said to be chemically inert to concentrated acids and alkalies at room temperature.

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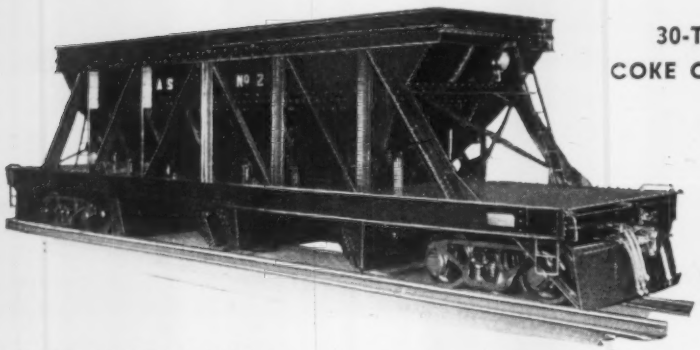

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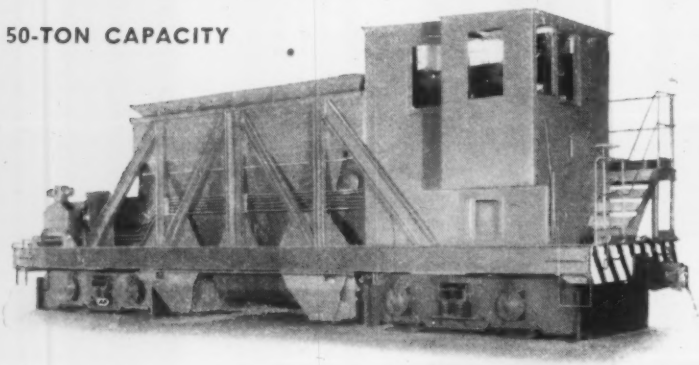
50-TON CAPACITY



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ASTM Committee A-1 Revises Steel Specifications, Tests

MANY actions on steel specifications and tests took place at the mid-winter series of meetings of ASTM Committee A-1 on Steel held in Cleveland, February 5-7. Standards related to steel springs, carbon and alloy bars, pipe and tubing, bolting materials, valves, flanges, and fittings for high and low temperature service, steel forgings, plates, structural steel, and other widely used products.

Subcommittee IX, on pipe and tubing, recommended the society issue emergency alternate provisions permitting a higher phosphorus in certain of the alloy steels where heavy scrap additions must be made. This should naturally cut the loss of heats where it is difficult to lower phosphorus to greater limits without undue sacrifice of important alloys.

Steel Track Fastenings—Changes in two standards involving track fastenings were approved, subject to letter ballot action and also favorable consideration by the AREA. In the heat treated carbon and alloy track bolt and nut specification A 183, strip test requirements are to be changed; steel grades are also consolidated so that, eventually, there will be just two groups, carbon steel with tensile strength of 110,000 psi and an alloy steel with a strength of 115,000. The current standard for quenched carbon-steel joint bars A 49 is to be revised to tentative with some nominal changes in chemistry and a tightening of the number of test sections which will require one tension and one bend test on each lot of 1000 bars, or fraction, but in no case less than one such test on each heat.

Structural Steel—Changes in the structural nickel steel specification A 8 will make it applicable for use with the general requirement specification A 6. This material requires a tensile strength of 90,000 to 115,000 psi minimum. Revisions in the structural silicone specification A 284 will satisfy more fully the bridge engineer's needs. This specification now gives a wide range choice of mechanical properties with limitation in chemistry for various thicknesses of plate, which range from thin plates up to 12 inches thick.

A new manual on mechanical testing procedures for structural steel is being completed.

The Spring Steel and Steel Springs—Group completed one of the first ASTM steel specifications where hardenability requirements are the

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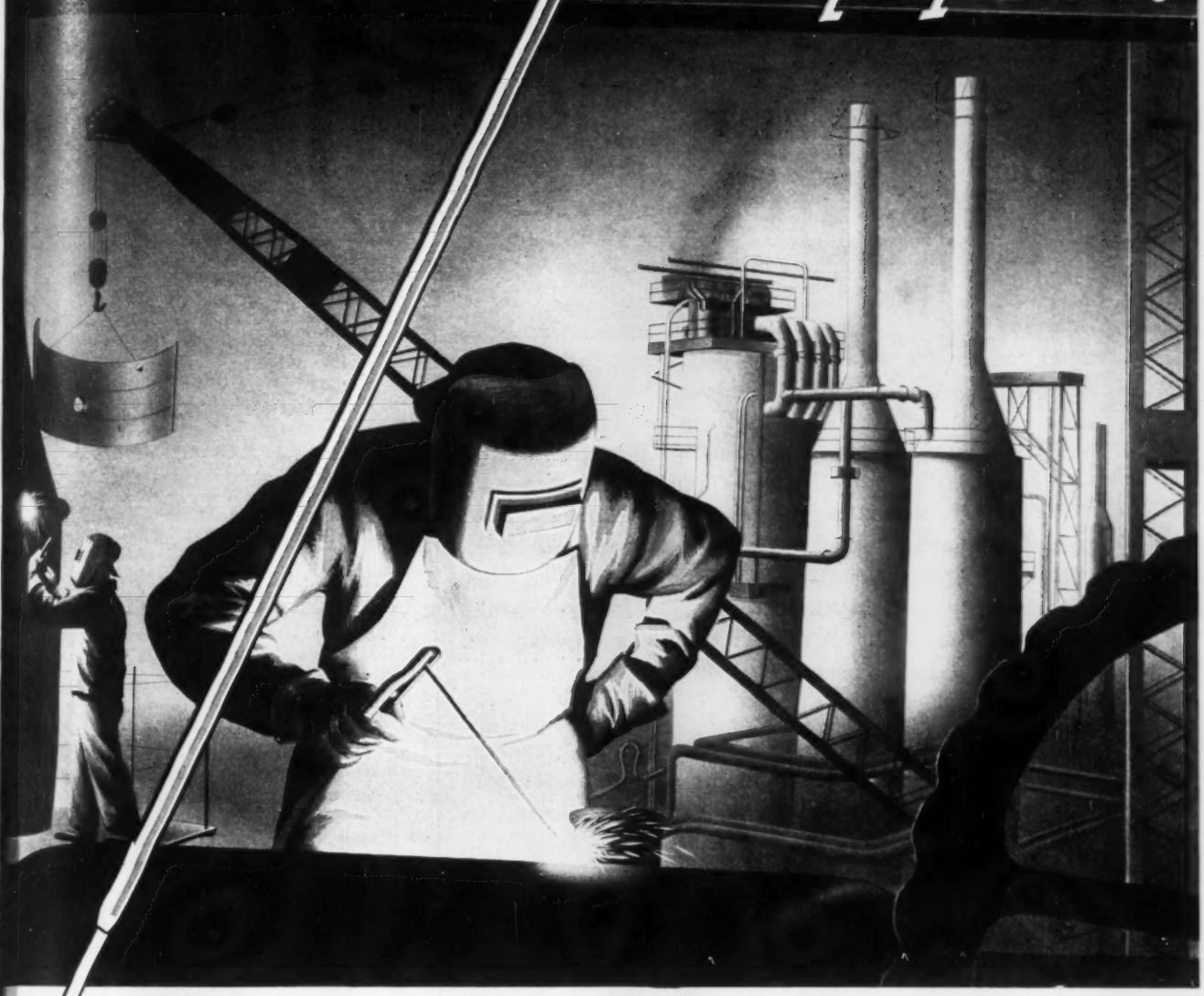

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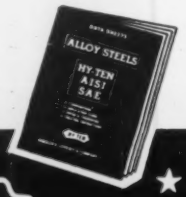

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basis of purchase. The proposed tentative covers bars for springs of the 8600 (nickel-chrom-moly) series of steels. The tentative for heat-treated leaf springs A 147-49 T is to be advanced to standard, the former standard carrying a 1939 date to be dropped.

In the important field of music spring wire, specification A 228, a revised table of tensile requirements will be adopted. This provides tensile strengths from 251,000 to 439,000 minimum psi, the diameters ranging respectively from 0.156 to 0.004. Tensile strength for oil-tempered steel spring wire A 229 is to be narrowed by raising all minimum tensiles.

Forgings—In the group of specifications covering turbines and generator parts involving usually heavier type forgings, higher strength steels are being added to the tentatives covering rings and pinions for reduction gears A 290 and A 291 and for turbine and turbine generator rotors and shafts A 292 and A 293. A new specification for alloy steel pressure vessels was agreed on but is subject, as are all the other changes, to letter ballot confirmation.

This committee is drafting a recommended practice for the ultrasonic testing of forgings. It is also drafting standardized requirements for tension testing of forgings.

Steel Tubing and Pipe—Among the actions in subcommittee IX was an approval to set up emergency alternate provisions permitting higher phosphorus in certain standards, the incorporation in virtually all the pipe and tube specifications of a range of check analysis for chemistry, approval of new specifications on seamless and welded tubes for low temperature service, a new system of grade designations which would cover all of the specifications and bring better order in this respect, and the addition of new grades of low metalloid to the ingot iron material in the welded alloy open-hearth iron specification A 253.

Producers who must use scrap which may be high in phosphorus stressed the necessity for emergency action in raising the permissible limits so that more efficient use could be made of alloy steel for products such as still tubes, boiler tubes, both seamless and welded, and austenitic seamless and welded tubing for general, sanitary, and refinery service. While ASTM has not renewed its procedures so widely used during World War II involving emergency specifications and alternate provisions, a somewhat similar plan is expected. This involves the issuance

of "pink slips" which can be affixed to the specifications, and also includes publication of the complete provisions or notice in the ASTM bulletin.

In the steels affected, it is proposed the present phosphorus limits of 0.030 be raised to 0.045 per cent as an emergency measure.

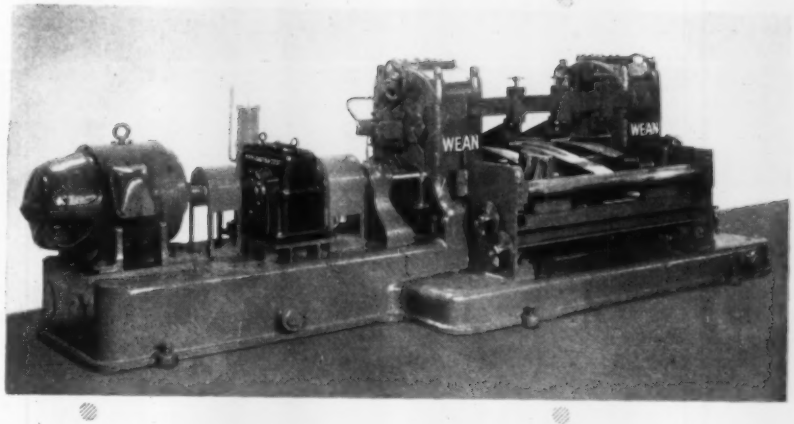
The new tentative for low temperature service will cover seamless and welded carbon and alloy material. Three ferritic grades are provided, a carbon steel and two for nickel-silicon. Reference is made to austenitic grades which are suitable where Charpy impact values of 15 ft lb minimum are required. Rather rigorous requirements are incorporated and, in addition to chemical composition and tensile properties, the material is subject to flattening, flaring, hardness, impact, and hydrostatic tests. This new tube specification will be a companion standard to one recently approved for pipe for low temperature service A 333.

On grade designations, the committee proposes to substitute for the current not-too-clear T numbers a new system which will use the carbon, molybdenum, chromium or other major alloying element as the key. For example, Grade CMB would be the present low carbon-molybdenum grade; Grade CR 2¼ would be the 2¼ chromium steel and CR9 would be the nominal 9 per cent chromium alloy.

Plates for Boilers and Pressure Vessels—Work in committee A-1 on carbon and alloy steel plates for boilers and pressure vessels cover a heavy tonnage product, and the numerous plate specifications are widely used, many being incorporated in the boiler code. A grade of plate with 1 per cent chromium, ½-per cent molybdenum was approved. The new manual on mechanical testing of steel plates was completed, and started toward eventual approval in committee A-1 and the society. Studies will continue of additional test requirements for steel for pressure vessels at low temperatures A 300. Check analysis requirements were approved in the rivet specification A 31.

Bar Steels—ASTM has numerous specifications for carbon and alloy steel bars, some of these covering chemical requirements only, others are based on mechanical properties, some on heat treatment, while others are cold finished material. One involves end-quench hardenability requirements A 304. On the latter, intensive studies have been under way to improve the requirements. A complete overhauling of this tentative was approved in subcommittee XV.

Two important grades of steel are



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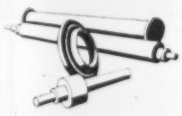
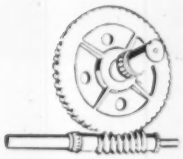


STEEL FORGINGS—Hammered and pressed steel forgings—rolled rings and flanges.



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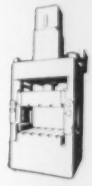

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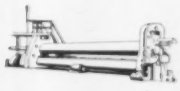

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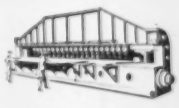

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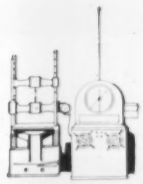
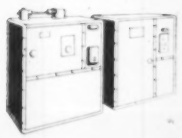


TESTING MACHINES AND INSTRUMENTS—Universal, Fatigue, Stress Analysis.



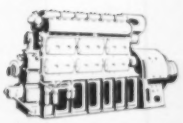
FATIGUE MACHINES—A complete range of sizes, for simulated service testing.

STRAIN GAGES AND INSTRUMENTS—For an accurate picture of stress distribution.

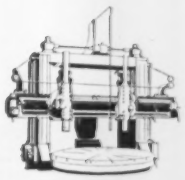
CRANES—Full range of capacities up to 110 tons, crawler and rubber mounted.

SHOVELS—Capacities from ¾-yd. to 6-yd. Design features increase output.

DRAGLINES—Available in variable capacities for economical earth-moving performance.

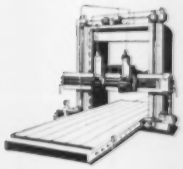


DIESEL ENGINES—For stationary and marine applications.



BORING MILLS—100" to 43' swing, with mechanical, electronic or hydraulic controls.

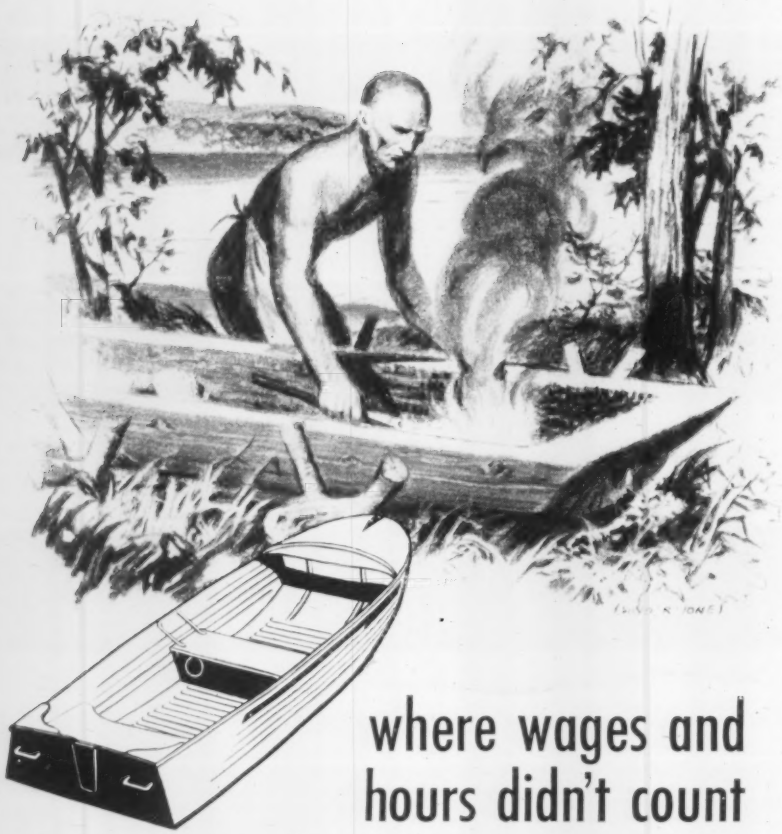
HEAVY DUTY LATHES—Line includes 40" to 168" engine lathes; or larger.



PLANERS—Standard models from 84" to 15'. Latest controls, every modern feature.

Baldwin-Lima-Hamilton Corporation, Philadelphia 42, Pennsylvania. **Plants:** Eddystone and Burnham, Pa.; Lima, Hamilton and Middletown, Ohio; Rochelle, Illinois; Greenwich, Connecticut; San Francisco, California. **Offices:** Chicago, Cleveland, Houston, New York, Philadelphia, Pittsburgh, San Francisco, St. Louis, Washington

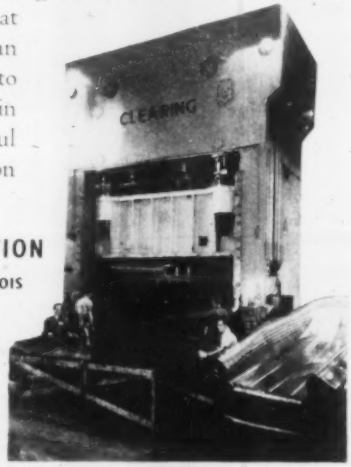
LIMA-HAMILTON



where wages and hours didn't count

Slowly shaping his log canoe, the savage punched no time clock, expected no fringe benefits. Even our most backward manufacturing has come a long way from that cost-unconscious era, but in many a plant there's still room for new, labor-saving (thus cost reducing) practices.

A modern Clearing press, with a single stroke, can create in a few seconds all the "added value" that used to require many, many man hours. Put your basic economics to work on *that* equation—then get in touch with Clearing for some helpful suggestions about *your* production problems.



Making aluminum boats on a Clearing press.

CLEARING MACHINE CORPORATION

6499 WEST 65th STREET • CHICAGO 38, ILLINOIS

CMC CLEARING

CLEARING PRESSES

THE WAY TO EFFICIENT MASS PRODUCTION

to be added to existing standards. C 1109, a carbon grade used for manufacture of nuts, is to go in the hot rolled carbon specification A 107, and a nickel grade A 2330, in the companion alloy steel tentative A 322.

Sheets—Studies of the use of hot rolled carbon sheets for pressure vessels resulted in agreement on a new specification for material of flange and firebox qualities. There are three grades in each classification, the carbon content ranging from 0.15 to 0.28 per cent. Tensile strength ranges are from 45,000 to 70,000 psi with yield point minimum not less than half the tensile strength. The elongation in 8-inch gage length specimen ranges from 16½ per cent in heavier thicknesses and for the higher strength material, to 21½ per cent minimum on the thinner material in softer steel.

A new specification for commercial quality cold rolled sheets is to be drafted.

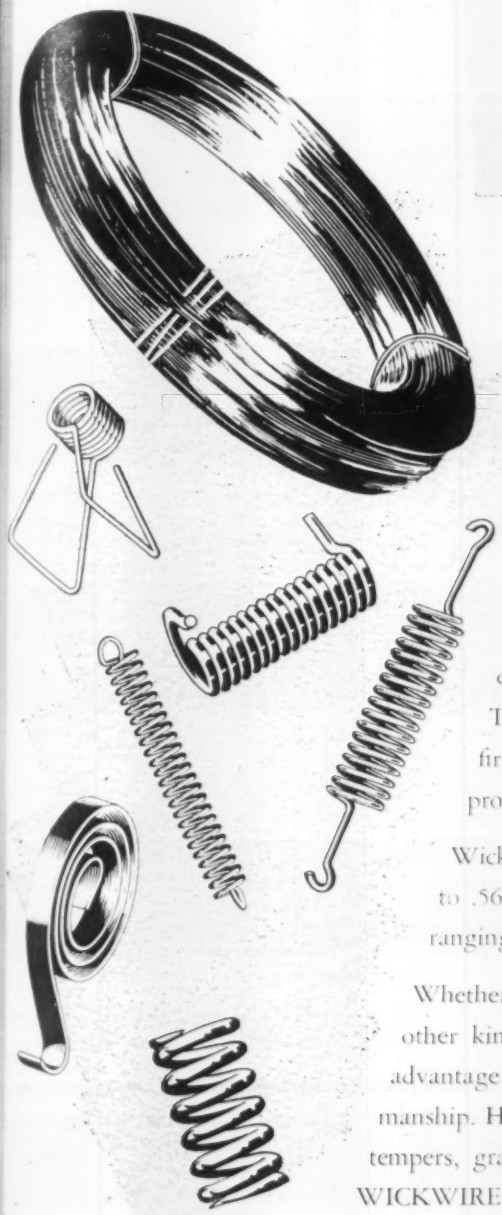
Valves, Flanges, and Fittings—Work will continue on proposed standards covering austenitic type welding fittings and also on steel castings for low-temperature service. New requirements for austenitic steel castings for service at elevated temperatures and pressures were approved. In the standard covering forgings for flanges and fittings, A 182, the current 1 per cent chrome grade will be modified to the more popular 1½ per cent composition. A new grade of austenitic steel, type 304, is to be added to both the high- and low-temperature bolting specifications. In the nut specification, A 194, two grades of nickel-chromium steels using selenium and titanium for free machining and stabilizing will be added.

Among the recommendations affecting pipe for service at elevated temperatures were the approval of check analysis ranges in several specifications, more precise definition of "heat-treated lots," and decisions to develop new standards covering fusion welded alloy pipe, which involves heavy wall thicknesses and sizes; and also to consider a specification for centrifugally cast steel pipe in the ferritic grades. The latter study will parallel similar work involving the austenitic grades.

The action calling for emergency increase of the permissible phosphorus limits from 0.030 to 0.045 per cent was asked in the alloy pipe specifications A 158 and A 312.

Bolting—For two years, the wedge test, as a supplement to the tension test for determining the mechanical

OIL TEMPERED



by

WICKWIRE

Uniform tensile strength and high fatigue life—these qualities have won outstanding preference for Wickwire Oil Tempered Wire. This established preference is amply confirmed by the fact that today Wickwire is one of the largest producers of oil tempered wire in the world.

Wickwire Oil Tempered Wire is available in sizes from .009 to .5625; supplied in cut lengths and in coils with diameters ranging from 8" to 72".

Whether your requirements call for oil tempered wire or any other kind of specialty steel wire—it will pay you to take advantage of Wickwire's long experience and skilled craftsmanship. High or low carbon steel...round or shaped...in all tempers, grades and finishes—when you order wire, specify WICKWIRE.

WICKWIRE WIRE

CF&I & SUBSIDIARIES

A PRODUCT OF WICKWIRE SPENCER STEEL DIVISION • THE COLORADO FUEL AND IRON CORPORATION

WIRE SALES OFFICE—361 Delaware Ave., Buffalo 2, N. Y. **EXECUTIVE OFFICE**—500 Fifth Ave., New York 18, N. Y.

SALES OFFICES—Atlanta • Boston • Buffalo • Chicago • Denver • Detroit • New York • Philadelphia

PACIFIC COAST SUBSIDIARY—The California Wire Cloth Corp., Oakland 6, Cal.

The DIMENSIONAIR

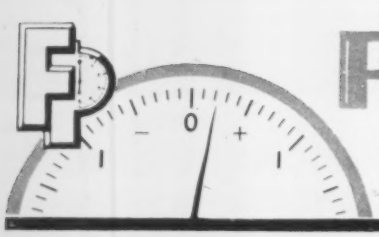
This New Air Gage is no ordinary gage for measuring variations in dimensions by air. In the first place it has approximately three times more measuring range.

We've had one of these gages on trial at a honing operation for weeks in a customer's plant. It is really a tough job and one of the dirtiest we could find. They reported to us that the operator has not had to reset the zero setting for a full week. The customer has ordered two Dimensionairs and refuses to give up the demonstrator.

A top executive in one of the automotive plants who knows all types of gages said, "That is the best air gage I've seen".

A maintenance man, who has had a lot of experience setting up and maintaining air gages, exclaimed. "That's something really easy after you've fiddled around with others".

If you're not afraid of showing your chief inspector a gage he'll take a shine to, pass him the word about the Dimensionair. You'll be happy you did. FEDERAL PRODUCTS CORPORATION, 1212 Eddy Street, Providence 1, R. I.



FEDERAL

Largest manufacturer devoted exclusively to designing and manufacturing all types of DIMENSIONAL INDICATING GAGES.

properties of quenched and tempered steel bolts, specification A 325, has been under consideration. A revision was agreed upon using the wedge under the head of the bolt as a means of assuring a properly headed bolt.

Ammunition Enamel Dries Fast

An enamel that dries twice as fast as that previously used for ammunition finishes is a new development of the Paint & Chemical Laboratory, Aberdeen Proving Ground, Md. It is anticipated this improved drying rate will speed production lines making shells, bombs, grenades and other ammunition components. The research leading to the development of this improved ammunition finish utilized the advantages of Cycopol resins, the styrenated alkyds developed by American Cyanamid Co., New York, and offered to paint and varnish manufacturers two years ago.

The new specification, MIL-E-10687 (ORD), indicates the enamel will set to touch in a maximum of 6 minutes and dry hard in 10 minutes, compared with an allowable 10 minutes for set to touch and 30 minutes for hard dry specified for the previously used finish. The acceleration in drying speed is accompanied by increased toughness, adhesion and resistance to salt spray and weathering. While salt spray resistance of at least 150 hours is required, test panels exposed for over 250 hours at Aberdeen have shown negligible failure.

Production Test Conserves Nickel

A new method for determining the weight of thin nickel coatings used in preparing metal for porcelain enameling is announced by Porcelain Enamel Institute, Washington. It is expected to enable more efficient use of the critical material and conserve the limited supply. Developed through experiments supervised by PEI's Quality Development Committee, the test fills the need for a fast, non-destructive "weighing" method to help control the actual weight of nickel coatings. These coatings are an important factor in developing a strong enamel-to-metal bond in porcelain enamel applications. A plant workman without professional training can administer the test.

PEI says the new test overcomes two disadvantages of previous methods. The old tests are too time consuming for use as practical control methods and necessitate either special samplings or destruction of parts being tested. The new method can be

applied to parts in process if desired. Copies of the booklet "Tentative Standard Test for the Determination of Nickel" are available from the institute for 25 cents.

Plastic Armor Cuts Corrosion

A new service for coating vinyl or polyethylene over customers' tubing before installation is being offered by Samuel Moore & Co., Mantua, O. It is intended for plants using instrument tubing or fluid transmission lines subject to moisture or corrosive atmospheres.

Coating is by the Dekoron process that extrudes a thick plastic sheath over steel, copper or aluminum and renders the metal tube virtually impervious to moisture, salt air, acids and alkalis or corrosive industrial atmospheres. Dekoron tubing is made in sizes ranging from about ⅛-inch to 3 or more inches. Thickness of the plastic armor can be varied from 0.015-inch to practically any thickness required by service conditions. Company is prepared to coat copper, steel or aluminum either in straight lengths or in 50-foot coils.

Conveyor Has Big Lift

A steel, rubber and fabric belt 42 inches wide and capable of conveying 1200 tons of coal per hour up a 3290-foot slope to a height of 868 feet was installed by Goodyear Tire & Rubber Co., Akron, at the Chicago, Wilmington & Franklin Coal Corp.'s new mine near Waltonville, Ill. Belt moves 625 feet per minute, taking 5 minutes and 15 seconds to go from bottom to top.

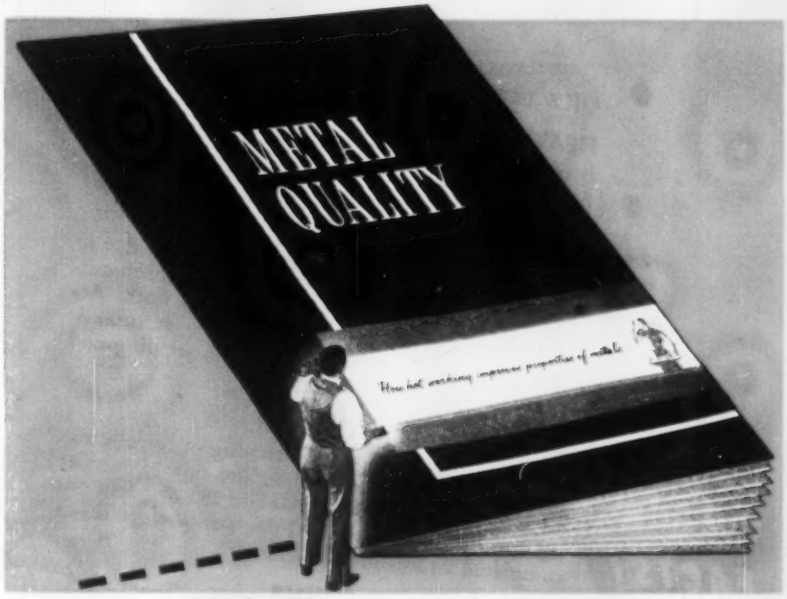
Link-Belt Co., Chicago, used 409,000 pounds of steel in building the structure for the belt. Included in the installation were: 5 impact-cushioning idlers, 38 self-aligning idlers, 681 troughing idlers (three steel rollers to each), 31 self-aligning return rollers and 400 return rollers.

Belt weighs 89.5 tons and moves a 105-ton load of coal at about seven miles per hour by means of a 1500 hp synchronous motor driving the head pulley through an eddy current clutch. Design load of the belt is about 90,000 pounds of tension.

Lightning Maker Goes to India

A high current impulse generator incorporating modern research developments and design techniques is on its way to the Indian Institute of Science, Bangalore, India, from the General Electric Co.'s transformer and allied products division, Pittsfield, Mass. It will be used to ex-

This REFERENCE BOOK on FORGINGS...



It can help you reduce cost at the point of assembly!

There are thousands of instances where forgings have reduced the cost of parts at the point of assembly. This booklet containing 60 pages of authoritative information on forgings formed to close tolerances by use of closed impression dies tells how cost reductions may be obtained. Forging production techniques are described and illustrated.

Forgings provide rapid assembly of complex parts by welding adaptability of widest range; forgings permit reduction of dead weight because maximum strength and toughness are obtainable in lighter sectional thicknesses; forging to shape avoids waste of metal and reduces machining and finishing time-cost. The metal quality and cost-reducing possibilities obtainable in forgings cannot be equalled or duplicated.

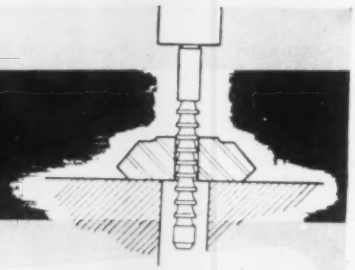
Recheck every stressed part in your equipment, as well as simple handles and levers, and consult a forging engineer about possibilities for reducing costs at the point of assembly. Only a forging engineer can inform you fully regarding the numerous advantages obtainable with forgings. Your copy of this reference booklet on forgings is available now. Attach coupon to your business letterhead.

DROP FORGING ASSOCIATION
605 HANNA BUILDING
CLEVELAND 15, OHIO

Please send 60-page booklet entitled "Metal Quality — How Hot Working Improves Properties of Metals," 1949 Edition.

Name _____
Position _____
Company _____
Address _____

HELPFUL HINTS ON INCREASING BROACH LIFE



Page C-4

OILS FOR BROACHING

HEAVY DEMAND ON CUTTING FLUID

Broaching places a great demand on the cutting fluid due to the large amount of metal being removed and the necessity for maximum broach life and finish.

Stuart's THREDKUT and related products, due to their high effective sulphur content, have been outstanding for the most severe broaching work. Active or effective sulphur in an oil serves as an anti-weld agent preventing metal seizure, welding and scuffing.

QUICK FACTS!

SLOW SPEED BROACHING

For unusually slow speed broaching of ferrous materials it is often desirable to use oils of heavier viscosity (such as THREDKUT #25) that will not drain off of the broach and the work before it has completed its mission.

GOOD RULE OF THUMB

When excessive front clearance wear is observed on the cutting teeth of the broach, DECREASE active sulphur in the oil by diluting with paraffin oil or other blending oils. When poor finish is encountered due to pick-up and welding, apply Stuart's THREDKUT or THREDKUT #99 straight.

USE OF WATER-MIX CUTTING FLUIDS

On some flat surface broaching and on round hole work it is often desirable to use a water-mix cutting fluid of top quality. Stuart's SOLVOL, a heavy duty "soluble" oil, is widely recommended.

PROOF!

"With their regular oil they only broached 12 pieces when the broach wore badly and bugged. This is a 4140, 240-270 Brinell forged gear blank with a 1" hole and 1/4" deep keyway to broach at one pass with a combination broach, 1' for the round hole first, followed by 2' for the keyway.

"They put in THREDKUT #99 and the broach was still in good condition after running 1500 pieces." WRITE FOR LITERATURE and ask to have a D. A. Stuart representative call.

D.A. Stuart Oil CO.

2735-37 S. Troy Street, Chicago 23, Illinois

tend investigations of heavy surge currents and their effect on electrical apparatus and will simulate currents of natural lightning discharges.

Generator is rated at 100,000 volts, 6 mfd and 150,000 amperes, consisting of 48 capacitors rated at 50 kilovolts, 0.5 mfd. Capacitors are mounted on shelves arrayed in an open square to facilitate a direct discharge into the test specimen which will be placed in the test cabinet located in the center. Measurement of the high currents this machine is capable of generating requires special high surge current shunts which are accurate to within 1 per cent up to 400 kilocycles.

Burs Resharpened by P & W

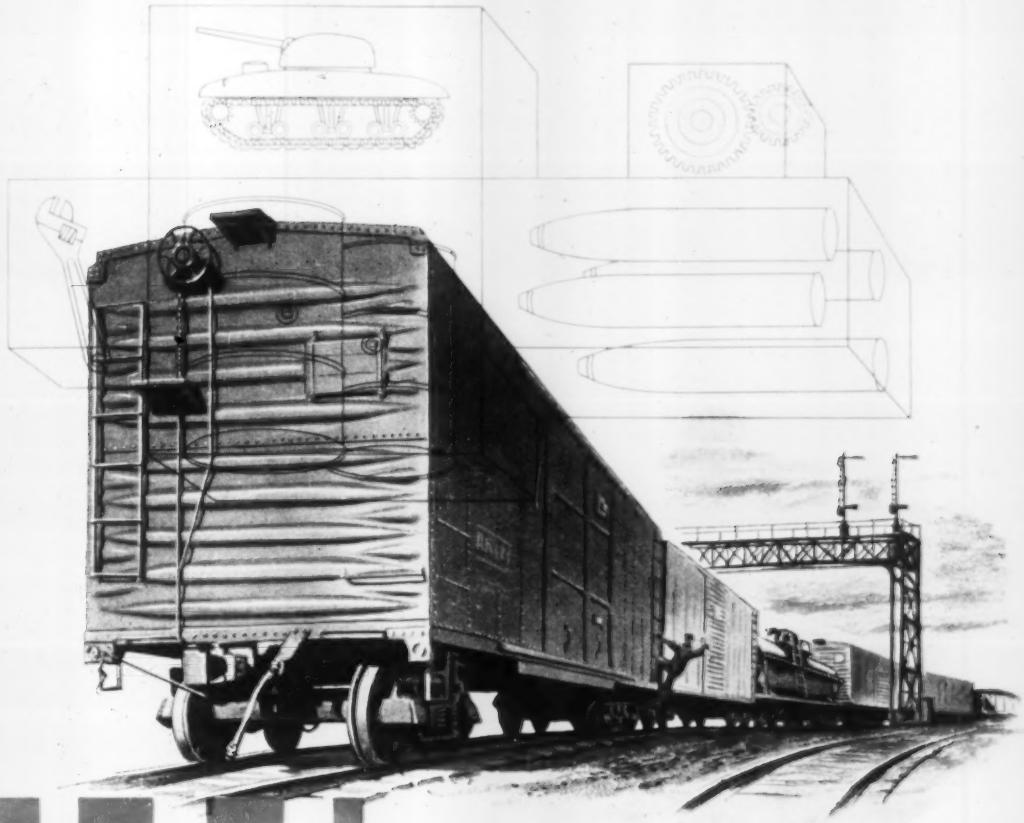
Cobalt and tungsten shortages have already affected the production of carbide burs so Pratt & Whitney, division of Niles-Bement-Pond Co., West Hartford, Conn., is making a bur resharpening service available not only to users of its products but to those firms using burs made by other firms. Plants taking advantage of this service not only will aid in conserving tungsten and cobalt but will also find resharpening means substantial savings.

Burs returned for resharpening are first inspected for shank runout. Bent shanks are removed and either straightened or replaced. Resharpening is then performed in the same manner that P&W Kellerflex burs are ground, with a minimum of stock removed to insure longest possible bur life. Special machines designed by the company are used which grind precisely under the control of accurate master forms. This process insures complete shank concentricity plus uniformity of flute spacing and angles. The result is a sharp cleanly fluted tool with cutting ability equal to a new bur.

Generator "Check-ups" Urged

Regular physical "checkups" for 100-ton generators, giant motors and other machinery vital to defense production are urged by Westinghouse Electric Corp.'s dynamo experts. John S. Johnson, insulation development engineer for the company, prescribed a maintenance inspection program for such giant rotation machinery at the mid-winter meeting of the American Institute of Electrical Engineers. "Just as human life can be prolonged by periodic physical checkups," he said, "so can the life of a turbine generator or industrial motor be increased by a thorough inspection which reveals signs of deterioration."

Visual and electrical tests devised



STEEL

THE VEHICLE OF DEFENSE

Without steel there would be little or no movement of men and material . . . there would be little or no defense.

Currently, the railroads of America, in order to fulfill their assigned responsibility in the gigantic program of national defense, have ordered $500,000,000 worth of freight cars—steel freight cars.

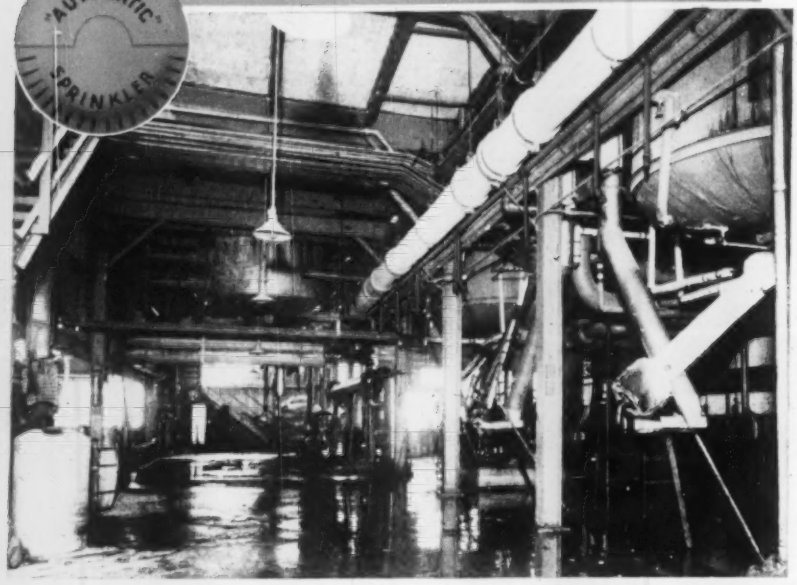
The steelmakers of America have responded in like manner, increasing facilities, stepping up production and allocating a predetermined portion of their total output to car foundries and car builders.

Weirton Steel Company, pledged to participate in defense measures in any way and to any required degree, is supplying a substantial part of its production for the program to increase America's freight car supply.

WEIRTON STEEL COMPANY
WEIRTON, WEST VIRGINIA

NATIONAL STEEL CORPORATION

FIRE SAFETY WITH SAVINGS FOR AMERICAN BUSINESS



"Automatic" Sprinkler Protection is tailored to the Fire Protection requirements of these chemical plants

Here listed are but a few of the top chemical processing businesses whose personnel, manufacturing operations and business continuity have been safeguarded from fire by "Automatic" Sprinkler:

Allied Chemical & Dye Corporation
Bakelite, Inc.
Batium Reduction Corporation
Buckeye Cotton Oil Company
Defender Photo Supply Company
Delta Products Company
General Tire & Rubber Company
Glidden Company
Goodyear Tire & Rubber Company
Harshaw Chemical Company
Hercules Powder Company
Interchemical Corporation
Lever Brothers Company, Inc.
Minnesota Mining & Mfg. Co.
Monsanto Chemical Company
Pathfinder Chemical Corporation
Pierce & Stevens, Inc.
Pittsburgh Plate Glass Company, Columbia Chemical Division
Procter & Gamble Company
R. B. H. Dispersions, Inc.
Reilly Tar & Chemical Corp.
Rohm & Haas
Schenectady Varnish Company
G. D. Searle Company
Southern Alkali Corporation
U. S. Industrial Chemicals, Inc.
Witco Chemical Company

Adequate fire protection is essential to the safe and economic operation of chemical plants and—the same is true of all types of industrial, commercial and institutional properties.

Whether your needs call for "Automatic" Sprinklers, CO^2 gas, chemical or mechanical foam, "Automatic" FIRE-FOG, or a combination system of protection, our preliminary engineering service now makes it possible to fairly evaluate the economic and adaptability features of each method, for your own risk.

Let our nearest representative show you how to save lives . . . save property and save money with fire protection by "Automatic" Sprinkler. *Literature available upon request.*

"AUTOMATIC" SPRINKLER CORPORATION OF AMERICA
YOUNGSTOWN 1, OHIO

"Automatic" Sprinkler
FOR INVESTMENT PROTECTION

DEVELOPMENT · ENGINEERING MANUFACTURE · INSTALLATION

OFFICES IN PRINCIPAL CITIES OF NORTH AND SOUTH AMERICA

by Westinghouse engineers determine accurately the condition of insulation and what must be done to restore it to required strength. The medical cystocope is used to examine insulation deep with the coils of a generator or motor as are a variety of electrical instruments, meters and gages. A thorough inspection program accomplishes two things: It provides users with manufacturer's experience and know-how to anticipate and correct difficulties which may arise before they become operational hazards and enables manufacturers to accumulate performance experience that can be used as a guide in design and construction of equipment for the future.

Portable Scaffold Rises Quickly

Lengths of aluminum or steel tubing and quick acting clamps can be made into scaffolding rapidly using only an ordinary wrench. Safway Steel Products Inc., Milwaukee, introduced this scaffolding that fits building and ground contours for all kinds of construction and maintenance work. Basic parts are light but strong, easy to handle and assemble and adaptable to any working conditions.

In erecting a tube and clamp scaffold, vertical tubes are set up and linked together at intervals with horizontal members. Horizontals are arranged both parallel and at right angles to the working surface, forming a box-like structure of great strength and rigidity. Horizontal members also act as platform supports. Upright members may safely be extended as high as 200 feet. Diagonal bracing is provided to make high structures more rigid.

Instrument Standards Approved

First specifications for portable and laboratory indicating instruments have been approved by the American Standards Association, New York, in a revision of the American Standard for electrical indicating instruments. Users of these instruments can now more easily check them for performance to be expected and determine, from listed characteristics and limits, the accuracy class for any requirement.

Covered in the new edition are alternating and direct current instruments: Ammeters, voltmeters, single and polyphase wattmeters, power factor meters, varmeters and frequency meters. For the first time in this standard a new influence appears. This is the sustained operation influence defined as the change caused by energizing the instrument over extended periods of time over and above

the indications of the instrument when first connected to the circuit. Values are assigned for this influence and given in the charts on detailed requirements.

Definitions and classification of materials for switchboard and panel instruments are completely revised as well as extended to include portable and laboratory instruments. This new standard eliminates the errors and ambiguities in the original printing and will be of great value to those who are now using the old edition.

Stainless Important in Building

Functional as well as decorative features of stainless steel construction are covered in an illustrated booklet "Architectural Uses of Stainless Steels" published by the Committee of Stainless Steel Producers, American Iron & Steel Institute, New York. It illustrates successful applications, shows some stock parts available and features design details in ten pages of two-color drawings. More than 75 photographs of stainless steel installations and stainless components are contained in the booklet.

Metallurgy of stainless and the forms in which the metal is supplied commercially are covered with sufficient details to answer most questions that arise in an architect's office. A consulting architect worked with the committee in preparing the booklet.

Coal Cleaned by Tromp System

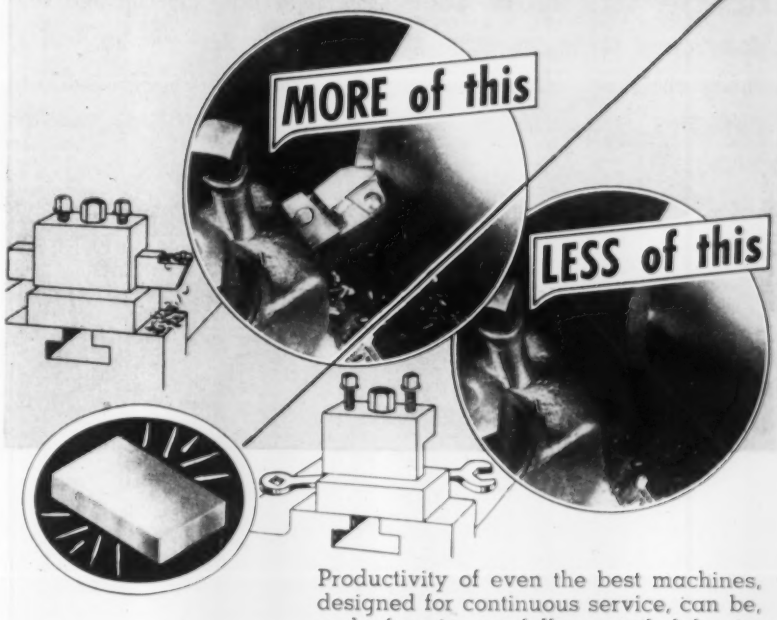
Patent and manufacturing rights for the Tromp heavy density coal cleaning system have been acquired for the Western Hemisphere by McNally Pittsburg Mfg. Corp., Pittsburg, Kans. This system is widely used in England, France and Holland for the efficient cleaning of the more difficult low-gravity as well as extremely high-gravity coals with or without magnetic media. The first American installation of the Tromp system is to process 800 tons per hour for Old Ben Coal Corp.'s mine No. 22 at Valier, Ill.

Tool Does Three Jobs

A combination tool called the Wodack-do-all performs the jobs of an electric hammer, drill and grinder. It is made by Wodack Electric Tool Corp., Chicago and is built to stand up under hard continuous usage. Complete weight of the tool ready for use is 15 pounds and it operates out of any electric utility outlet.

The complete tool is an electric hammer for drilling concrete or masonry. By removing the hammer member, it becomes a $\frac{3}{8}$-inch drill with a $\frac{3}{4}$-inch capacity for wood.

HOW TO REDUCE "LOST-BUT-PAID-FOR" MACHINE HOURS



Productivity of even the best machines, designed for continuous service, can be, and often is, woefully curtailed by inferior tools that wear rapidly and require frequent shutdown for replacement. Production is thereby recurrently interrupted, *but* costs never cease. Lost time must be paid for.

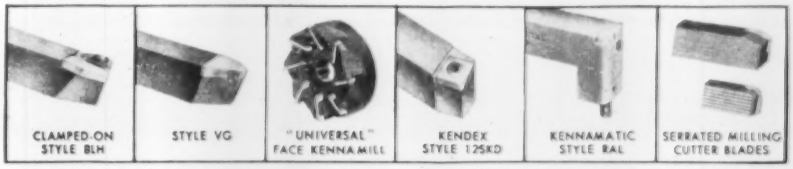
Kennametal tools, on the contrary, have a remarkably long service life. Outstanding durability is inherent. They work more hours per day, spend less time in the grinding room, and thus help reduce idle machine time, make operators more efficient, reduce tool inventory. Superior performance is attained because the physical structure of Kennametal is sound and uniform — the desired properties of hardness, strength, and toughness are consistent.

These outstanding characteristics are achieved through a unique coordination of manufacture and all-inclusive control from raw materials to finished product — refinement of all carbides directly from ores, oxides, and by-products — processing of these carbides into Kennametal compositions by exclusive methods and patented techniques — fabrication of complete tools and wear-part designs that fully utilize the distinctive properties of Kennametal.

For those who wish assistance in developing the most efficient tool applications Kennametal Inc. maintains a corps of competent Field Engineers in all important industrial centers. Their services are available for helping you to reduce lost-but-paid-for machine hours.

KENNAMETAL *Inc.*, Latrobe, Pa.®

MANUFACTURERS OF SUPERIOR CEMENTED CARBIDES AND CUTTING TOOLS THAT INCREASE PRODUCTIVITY



steel strip from continuous coils . . .

FOLLANSBEE COLD ROLLED STRIP feeds right from the coil into your automatics—a continuous supply of uniform strip steel for any kind of forming operation. Manufactured to your specifications Follansbee Cold Rolled Strip is available in tempers and finishes for most industrial applications.

time-saving supply system

FOLLANSBEE COLD ROLLED STRIP is production-line steel strip with machining characteristics suitable for freezers or furniture or fixtures. Regardless of the forming operation involved, the continuous feeding of Follansbee Cold Rolled Strip from coils saves time and labor and material.

that keeps automatics in action

FOLLANSBEE COLD ROLLED STRIP and Follansbee Polished Blue Strip are both furnished in continuous coils that keep automatics in action for real productioneering teamwork. To help you select coil diameters and weights, we'll send you without charge a Follansbee Coil Weight Calculator. Just write us on your business letterhead.

FOLLANSBEE STEEL CORPORATION
GENERAL OFFICES, PITTSBURGH 30, PA.
COLD ROLLED STRIP • ELECTRICAL SHEETS • POLISHED BLUE SHEETS
SEAMLESS TERNE ROLL ROOFING
Sales Offices—New York, Philadelphia, Rochester, Cleveland, Detroit, Milwaukee. *Sales Agents*—Chicago, Indianapolis, Kansas City, Nashville, Los Angeles, San Francisco, Seattle; Toronto and Montreal, Canada. *Plants*—Follansbee, W. Va.
FOLLANSBEE METAL WAREHOUSES
Pittsburgh, Pa. • Rochester, N. Y. • Fairfield, Conn.

CALENDAR OF MEETINGS

† *Denotes first listing in this column.*

Feb. 26-29, American Medical Association: Congress on industrial health, Biltmore Hotel, Atlanta. Association address: 535 N. Dearborn St., Chicago 10.

Mar. 5-7, Hydraulic Institute: Quarterly meeting, Santa Barbara Biltmore Hotel, Santa Barbara, Calif. Institute address: 122 E. 42nd St., New York.

†**Mar. 5-7, Manufacturers' Standardization Society, Valve & Fittings Industry:** Annual meeting, Commodore Hotel, New York. Society address: 420 Lexington Ave., New York 17.

Mar. 5-9, American Society for Testing Materials: Spring meeting, Cincinnati. Society address: 1916 Race St., Philadelphia.

Mar. 6-8, Society of Automotive Engineers: Passenger car, body and materials meetings, Hotel Book Cadillac, Detroit. Society address: 29 W. 39th St., New York.

Mar. 7, Bituminous Coal Research Inc.: Annual meeting, Deshler-Wallick Hotel, Columbus, O. BCR address: 2609 First National Bank Bldg., Pittsburgh 22. (meeting postponed from Feb. 7).

Mar. 12-14, American Society of Training Directors: Annual conference, Bellevue Stratford Hotel, Philadelphia. Convention address: Allegheny & 19th Sts., Philadelphia 32.

Mar. 12-14, American Roadbuilders Association: Annual meeting and national defense conference, Hotel Schroeder, Milwaukee. Association address: 1319 F St., Washington 4.

Mar. 12-15, National Electrical Manufacturers Association: Meeting, Edgewater Beach Hotel, Chicago. Association address: 155 E. 44th St., New York 17.

Mar. 13-16, National Association of Corrosion Engineers: Conference and exhibition, Statler Hotel, New York. Conference committee address: P. O. Box 6120, Philadelphia 15.

Mar. 14-17, American Society of Tool Engineers: Annual meeting, Hotel New Yorker, New York. Society address: 10700 Puritan Ave., Detroit 21.

Mar. 19-20, Liquefied Petroleum Gas Association Inc.: Convention and trade show; directors' meeting, Biltmore Hotel, Atlanta. Association address: 11 S. La Salle St., Chicago 3.

Mar. 19-21, National Association of Waste Material Dealers: Annual meeting, Stevens Hotel, Chicago. Association address: 1109 Times Bldg., New York.

Mar. 19-21, Steel Founders' Society of America: Annual meeting, Edgewater Beach Hotel, Chicago. Society address: 920 Midland Bldg., Cleveland 15.

Mar. 19-23, American Society for Metals: Seventh western metal exposition and congress, auditorium and exposition hall, Oakland, Calif. Exposition address: 215 S. Clark Dr., Beverly Hills, Calif.

Mar. 21-22, American Hot Dip Galvanizers Association Inc.: Annual meeting, Hotel Biltmore, Atlanta. Association address: 2311 First National Bank Bldg., Pittsburgh 22.

Mar. 22-23, Pressed Metal Institute: Spring meeting and technical session, Hotel Carter, Cleveland. Institute address: 13210 Shaker Square, Cleveland 20.

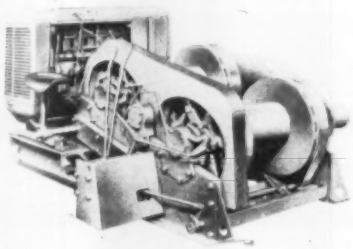
Apr. 2-3, Diamond Core Drill Mfrs. Association: Annual meeting, The Homestead, Hot Springs, Va. Association address: 122 E. 42nd St., New York.

Apr. 2-4, American Institute of Mining and Metallurgical Engineers: Open hearth and blast furnace, coke oven and raw materials conference, Statler Hotel, Cleveland. Institute address: 29 W. 39th St., New York.

New Products and Equipment

Heavy Load Handler

Frame-5, 8000-pound line pull hoist made by Clyde Iron Works Inc., Duluth 1, Minn., hoists heavy loads high and fast. Band friction clutches enable the operator to handle full capacity loads with ease. Equalized linkage gives smooth and even friction engagement and release. Outside friction surface affords good heat dissipation. Large diameter brakes



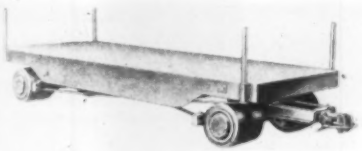
permit safe and accurate load control by merely "toeing" the brake lever.

A one-drum bull wheel swinger can be attached to any two or three-drum Frame-5 hoist. The complete unit is mounted off side to permit unobstructed rope clearance from any drum. Swinging is controlled by a single hand lever. Roller bearing thrust screw provides easy operation with less wear and maintenance. Brake is foot operated, and line pull is 6000 pounds.

Check No. 1 on Reply Card for more Details

Heavy Duty Trailers

Three industrial trailers for heavy duty haulings are introduced by Phillips Mine & Mill Supply Co., 2309 Jane St., Pittsburgh 3, Pa. Trailers are welded of heavy gage steel and can be used singly or in tandem. All



three models are available with a fifth wheel at both ends or at one end only.

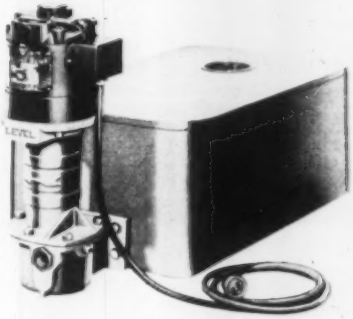
Model TFP-100 is a 5-ton capacity trailer with 16-inch diameter pneumatic-tired wheels for floor and load protection. It has a clearance of 40½ inches and stake pockets for use when side or end stakes are required. Model TF-100 has solid rubber tires and a 5-ton capacity. It stands less than 23 inches high and has four stake holes provided on each side. Model TF-300, illustrated, has a 15-ton capacity for heaviest industrial hauling. Over-all height is less than 24 inches, it has dual solid rubber tired wheels and removable stake near each corner.

Check No. 2 on Reply Card for more Details

Flexible Coolant Pump

A coolant pump and tank made by Delta Power Tool Division, Rockwell Mfg. Co., 600 E. Vienna Ave., Milwaukee 1, Wis., can be used on most wet machine tools. A single unit meets the needs of a multi-spindle drill press up to eight spindles.

Pump is of the centrifugal type and is mounted directly to the tank with a flat machined flange requiring no



piping from pump to tank. Six-bladed impeller is connected directly to the motor shaft. Several pump models are available, delivering from 6 to 32 gallons per minute.

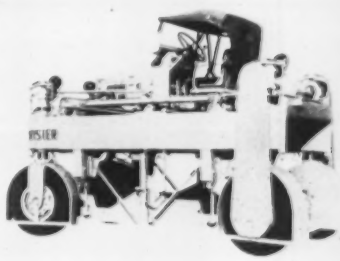
Mounted directly on the pump shaft, the ¼-hp motor is fully enclosed to protect it from moisture and caustic solutions. Tank has a 16-gallon capacity. A settling basin and wire mesh screen keep coolant free of chips.

Check No. 3 on Reply Card for more Details

Straddle Truck for Steel

Especially designed for handling steel is model MHS straddle truck made by Hyster Co., 2902 N. E. Clackamas, Portland 8, Oreg. It is a variation of the 30,000-pound capacity model MH straddle truck. The steel handling truck has double-row roller chains in the hoist mechanism instead of single-row chain as in conventional trucks, solid bar rather than channel sections in the lifting links, additional carrying capacity of the suspension springs, and heavier frame in the cross members and corner sections. Double-row roller chain provides stronger linkage between the hoist chain and the load-carrying shoes. Lifting links are threaded into socket members at their upper ends to provide a shoe adjustment on which the threaded sections cannot be damaged by action of the shoes proper.

Although capacity of the steel handling truck is rated the same as



the earlier model, suspension springs have added carrying capacity to accommodate consistent handling of capacity loads. Heavier frame is designed to withstand shock produced by the nonresilient packaging of steel billets and bars, which are handled on bolsters. Optional equipment includes guards to protect tires when extremely high temperature material must be handled and hydraulic steering.

Check No. 4 on Reply Card for more Details

Instant Starts and Stops

Welding machine and work table can be synchronized to start at the same time one button is pushed with the positioner model 14BT500 made by Aronson Machine Co., Arcade, N. Y. Machine was designed for automatic welding and features a solen-

oid actuated clutch that allows instant start and stop of the work table. Infinitely variable rotating speed of the work table from zero to 5 rpm is possible and back-lash is reduced to a minimum allowing smooth, jerk-free rotation. It can be tilted in any position about 360 degrees and lock. Work arm can be any length required up to 16 inches.

In the model illustrated a pull-bar

can be attached to the air cylinder through the hollow spindle to permit clamping the workpiece to the table. Advantage of the holding device is the speed with which the workpiece can be attached to the table. Positioner's weight capacity rating is 500 pounds.

Check No. 5 on Reply Card for more Details

Plate-Edge Accurately

A plate edge preparation device is announced by Air Reduction Sales Co., division of Air Reduction Co. Inc., 60 E. 42nd St., New York 17, N. Y.

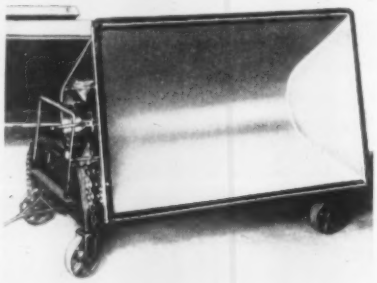
The ability to cut a single or a double bevel accurately with or without a land, recommends the edger especially for use in shops or factories that do steel fabrication work. Device employs a spring balanced, free floating carriage and caster wheel assembly to permit bevel cutting over plate undulations while maintaining a constant tip-to-work distance. It may be mounted on any gas cutting machine equipped with a 3-inch square torch bar.

Torches may be individually positioned vertically or laterally without changing the bevel angle. Fuel and preheat pressures are initially set with individual torch valves, and once set the master valve controls turning on and shutting off gas supply without disturbing settings of the individual torch valves.

Check No. 6 on Reply Card for more Details

Bulk Material Handler

Although primarily intended for use in machine shops, this side dump truck made by Klaas Machine & Mfg. Co., 4322 E. 49th St., Cleveland 25, O.,



can be used for any dry material, whether waste, parts or other bulk material.

Truck's side-dump feature makes disposal of machine chips and scrap easy, eliminating shoveling and other time-consuming operations. Trucks can be drawn by hand or [illegible]wered vehicles, singly or in trains. Trucks can also be used for temporary storage of materials.

Hod is made of sheet metal welded at the joints. It is counterbalanced to render dumping easy.

Check No. 7 on Reply Card for more Details

Countersinking Improved

A positive-type tool activating mechanism which permits precision operation on a wide variety of work up to 20-inch capacity is a feature of the latest model countersinking and deburring machine made by Black Drill Co., 1400 E. 222nd St., Cleveland 17, O. The control is a double rack and pinion traversing mechanism operated by a foot treadle.

Each rack carries an arm that is fitted with a micrometer adjusting stud which transmits pressure to the motor shafts. Arms are quickly adjustable by set screws to any rack position, while an adjustable stop on the lower rack definitely limits the travel of both motor shafts.

Motor sizes range from ¼ to 1-hp, 220 or 440 v ac, 3 phase. Table is 10 inches wide by 48 inches long. Overall height is 11 inches and max-

JEBCO PRODUCTS
MAKERS OF BAKER'S MAGDOLITE

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and among refractory dolomites it's . . .

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First in service to open hearth and electric furnace men.

Magdolite's superior chemical, physical and mineralogical composition, coupled with Baker's continued research and development in the application of refractories, assure you of a minimum of maintenance and repairs.

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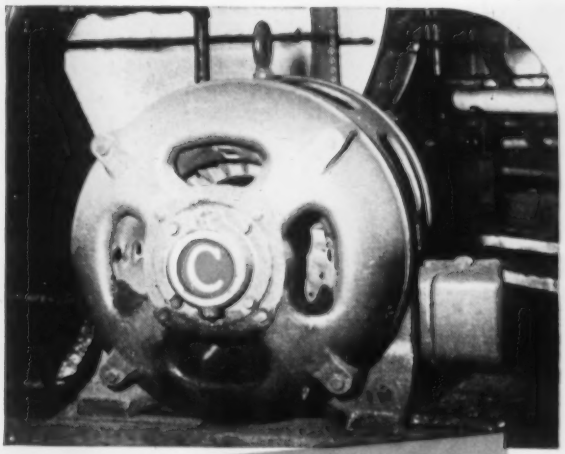
ALWAYS 5 WAYS BETTER • Composition • Preparation • Economy • Strength • Quality

THE J. E. BAKER COMPANY
YORK, PENNSYLVANIA
PLANTS: Billmeyer, Pennsylvania • Millersville, Ohio

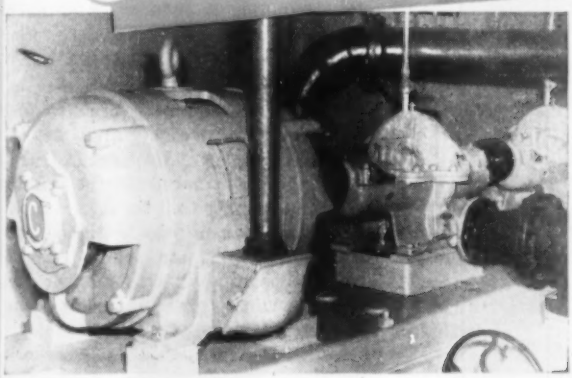
Century 40 horsepower, type SC motor driving an induced draft fan for a stack.



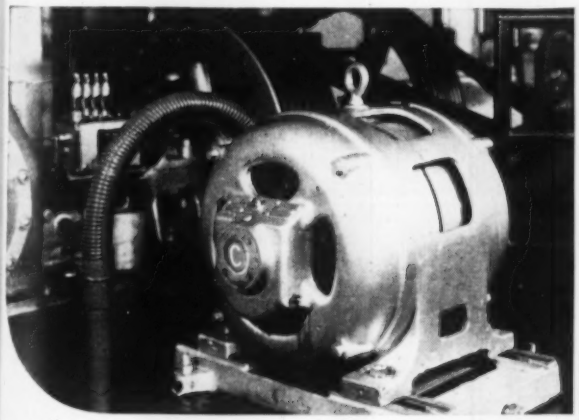
From Century's Line of Electric Motors You Can Select

1. **Right Kind**—*to match your current supply*
2. **Right Type**—*to meet your load characteristics*
3. **Right Protection**—*against atmospheric hazards*
4. **Right Size**—*from 1/6 to 400 horsepower*

Century Electric Company is celebrating its 50th year in the electrical industry.



Century 150 horsepower, type SC motor driving a two-stage centrifugal pump in a city water plant.



Two Century 75 horsepower SC high torque motors driving refrigeration compressors.

The wide range of kinds, types and sizes of Century motors makes it possible to select a standard motor to meet the requirements of all popular applications.

They are available for both AC and DC current—high, normal and low torque characteristics. Types are also available for applications requiring varying speeds and reversing direction of rotation.

To protect against atmospheric hazards, Century motors are enclosed in open rated drip proof, splashproof, totally enclosed fan cooled and explosion proof frames. Many types are available with vertical and flange mountings as well as standard horizontal bases.

Specify Century motors for all your electric power requirements.

Popular sizes and standard ratings are generally available from factory and branch office stocks.

Century C MOTORS

CENTURY ELECTRIC CO.
1806 Pine Street, Saint Louis 3, Missouri
Offices and Stock Points in Principal Cities

-624

Many manufacturers are gaining increased efficiency in the production of recessed head screws with Keystone's "special processed" cold heading wire. This wire has uniform upsetting and forming qualities. Because of its excellent flow properties, die and plug life are often more than doubled. Production reports show less waste, fewer rejects, reduced inspection time and a higher quality finished product when this superior cold heading wire is used.

Keystone's process of *drawing after galvanizing* smooths and hardens the zinc coating, increasing its lasting qualities and its physical properties. This smooth finish, corrosion resistant Spring Wire is available in Type 2 and Type 3 heavy weight zinc coating as well as the regular weight suitable for most applications.

If your product requires "special" steel wire, please consult us.

imum distance between chucks is 20 inches. Maximum cutting stroke is 1 inch on each tool.

Check No. 8 on Reply Card for more Details

Sheet Separator

Difficulty in separating sheets of steel for feeding into stamping presses and press brakes is eliminated by means of a nonelectric, permanent-type plate magnet unit announced by Verson Allsteel Press Co., 9340 S. Kenwood Ave., Chicago 19, Ill. It is known as the Verson Magnetic Sheet Floater and in addition to speeding up

sheet handling it reduces glove damage and injury to workers in the form of cuts from sharp sheet edges.

It consists of Alnico magnets, a stainless steel mounting bracket and a stainless steel wearing plate welded into a single, compact unit. A magnetic field is induced in the sheets in such a manner that the sheets repel each other causing the ends to float or fan out with air space between them. Separated in this manner the top sheet can be grasped by the worker and fed into the press.

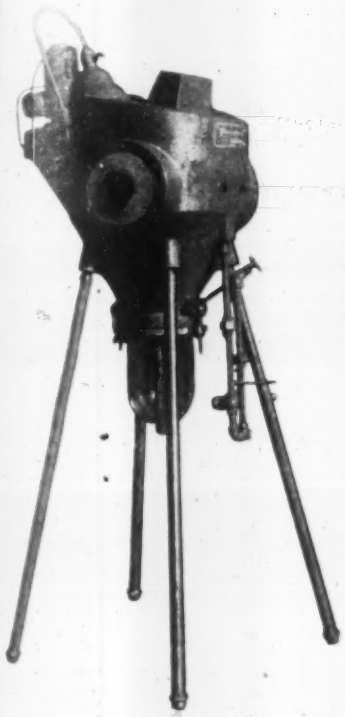
Check No. 9 on Reply Card for more Details

Midget Blast Cleaner

Liquid blast cleaning can be performed with a unit weighing only 40 pounds (where aluminum can be used for the main housing) and operable from either a ¼-inch compressed air line or any bottle of compressed gas. The midget unit made by Pangborn Corp., Hagerstown, Md., has a blast chamber 15-inches in diameter.

It is called the number 0 type EZ Hydro-Finish blast cabinet. It uses the same wide range of abrasives as larger models made by the company and can hold tolerances on blasted parts to within 0.0001-inch. Floor space requirements are 17 x 22½ inches and the unit which is illustrated on legs of standard ½-inch pipe can be bench mounted if de-

sired. Power requirement is 110 volts ac to drive the filter and dust bag motor. Air consumption is 5 to 20 cfm of air at 80 psi, depending upon nozzle size. Unit is provided with a chamber light, right and left



hand holes, a quick-opening valve for knee or leg operation and an observation window protected from splash and dirt by a cross-current of fresh inlet air.

Check No. 10 on Reply Card for more Details

Load Lightened

An aluminum single unit oil tank and pump combination enables the Lightning Load-Lift hand truck made by Market Forge Co., Everett, Mass., to raise loads readily. Hydraulic fluid is contained in the unit above the dual pump allowing it to circulate by gravity rather than being sucked up into the pump from a separate tank underneath. Truck is lowered by a right-angle flick of the handle eliminating stooping or bending to lower loads. The truck raises and lowers with the same lifting handle while the operator stands. This new one-unit pump also eliminates the need for gaskets, dust boot and needle-type valve. It fits interchangeably into all standard trucks made by the company and may be purchased as a separate unit.

Other features on the latest model include self-sealed bearings, cushion rubber or plastic wheels and double

Let Us Send You This
New Complete Data on
KINNEAR ROLLING DOORS

Your free copy of this brand new book brings you full, up-to-date details on all types of upward-acting doors for every need—including specifications on door sizes, headroom requirements, opening preparation, and so on. It shows you how and why the space-saving upward action of Kinnear Doors gives you highest efficiency at every opening.

In addition to the rugged, all-metal Kinnear Rolling Door—featuring the famous Kinnear-originated "curtain" of interlocking slats—it presents other Kinnear upward-acting doors. These include the sectional-type Kinnear RoL-TOP Doors (wood or all-metal), Kinnear Bi-Fold Doors (wood or all-metal), featuring two sections that "jacknife" upward and out of the way, and Kinnear Steel Rolling Fire Doors, the interlocking slat doors with special features for maximum fire safety. Kinnear Steel Rolling Grilles for protection that does not block light, air, vision, or sound are also shown. Write for this new Kinnear Catalog today!

KINNEAR
ROLLING DOORS

The KINNEAR Mfg. Co. Factories: 1780-1800 Fields Avenue, Columbus 16, Ohio
1742 Yosemite Avenue, San Francisco 24, Calif.

ball-bearing fifth wheel allowing the truck to steer easily with any handle position. Lifting and lowering mechanism is completely separate from the pulling handle.

Check No. 11 on Reply Card for more Details

High and Low Lifter

A lift truck with telescoping uprights low enough to enter a motor truck van body and with a lift high enough to tier merchandise and materials three pallets high is being produced by Mobilift Corp., 1135 S. W. Yamhill St., Portland 5, Oreg. The Tier-Master is 72 inches high with mast lowered but will lift 117 inches from floor-to-forks. Overall height of the mast extended is 142 inches.

The chain lift mechanism allows unobstructed view between the uprights and lifts at a speed of more than 45 fpm. It is a stand-up type, 2000 pound capacity fork lift truck with an outside turning radius of 57 inches and a zero inside turning radius. It is powered by a 3 cylinder air-cooled gas operated Mobilift engine.

Check No. 12 on Reply Card for more Details

• • •

SPOT WELDING CONTROL: Synchronous and nonsynchronous control equipment for low-capacity, spot-type resistance welding machines is offered by Westinghouse Electric Corp., Pittsburgh 30, Pa. Air-cooled thyratron tubes make and break the welding current, with no moving parts. Units can be mounted on or near the welding machine.

Check No. 13 on Reply Card for more Details

MEASURES SPEED: Electronic Measurements Co., Red Bank, N. J., is producing a stroboscopic tachometer that measures a wide range of speeds without physical connection with rotating equipment. Fundamental range of flashing speed is 600 to 14,400 per minute. These speeds can be read directly from a dial calibrated in revolutions per minute. Model 315A Strobotac operates on 105 to 125 v, 50/60 cycles.

Check No. 14 on Reply Card for more Details

FLOW REGULATING VALVES: Known as type V10 valves, a complete line of flow regulating valves designed to handle steam and water at high pressure drops, is announced by Swartwout Co., Cleveland 12, O. All internal parts of the valve, seat, disk and long guide sleeve are made of stainless steel which has been heat treated and ground to precision fit. They are supplied in seven pipe sizes ranging from 1 to 4 inches.

Check No. 15 on Reply Card for more Details

FOR PERFECT SEALS: Maintaining perfect seals for boiler handhole and tubecap cover assemblies is possible with style T gaskets made by Flexitallic Gasket Co., Camden 5, N. J. They require no compounds and can be reused if not removed from cover assemblies during outage. Gaskets are available in two thicknesses, 0.125-inch and 0.175-inch.

Check No. 16 on Reply Card for more Details

WIRE REINFORCED HOSE: For high pressure oil well drilling operations, United States Rubber Co., Passaic, N. J., introduces a new wire reinforced rubber and fabric rotary hose. Designated as Royal 4, it will drill a well from top to bottom regardless of pump pressure required or gas pressure encountered.

Check No. 17 on Reply Card for more Details

DETECTS FLAMMABLE GASES: A new explosion-proof portable instrument that will disclose the presence of flammable or explosive gases is announced by Lor-Ann Instrument Co., Jersey City, N. J. Besides the on and off switch, only a voltage check and a zero setting knob are necessary.

Check No. 18 on Reply Card for more Details

FUSIBLE PANELBOARD: NTPR panelboards, made by Square D Co., Chicago 11, Ill., provide plug fusible branches with heavy duty toggle switches for lighting and appliance branch circuit control. They are available with 4 to 40 circuits for use on either alternating or direct current applications.

Check No. 19 on Reply Card for more Details

NO RUST: Three new specially chromated antirust paints have been added to the Rustrem line of coatings by Speco Inc., Cleveland 9, O. Known as Rustrem Chromate Special, the new paints are available in clear, black and aluminum. They can be applied over rust without wire brushing or scraping and no primer is required.

Check No. 20 on Reply Card for more Details

ANTICORROSIVE COATING: Steelsaver, a high gloss, coal tar protective coating, developed by Continental Coatings Corp., New York 19, N. Y., protects metals, woods, masonry and insulations. It forms a tough, elastic film which resists penetration of chemicals, fumes, moisture and heat. It is nonsoluble in oil and completely waterproof. Steelsaver needs no primer and may be dipped, sprayed or brushed.

Check No. 21 on Reply Card for more Details

TILTING MOTOR BASE: A lightweight, adjustable tilting motor base for use with fractional motors up to 1 hp is available from Lovejoy Flexible Coupling Co., Chicago 44, Ill. It is adjustable in width and length to accommodate all sizes and types of fractional horsepower motors. It can be used with variable speed pulleys and acts as a belt tightener.

Check No. 22 on Reply Card for more Details

FOR METAL CLEANING: Cleaning of ferrous and nonferrous metals can be accomplished in one dip operation with the use of Cyclodiene Hydrocarbon made by Colonial Alloys Co., Philadelphia, Pa. No heating or mixing is required. The solvent degreaser penetrates into pores and is rust inhibiting.

Check No. 23 on Reply Card for more Details

EXTENSION LIGHT: Etraco Mfg. Co. Inc. Flemington, N. J., offers Reel-Lite, an extension light that uses a reel for holding the extension cord. It is available in several sizes with cords of 50 and 100 feet.

Check No. 24 on Reply Card for more Details

APPLIES, REMOVES SCREWS: Model 2EW, a portable electric impact wrench, offered by Mall Tool Co., Chicago 19, Ill., applies and removes screws, studs and nuts. It will also drill, tap, ream and extract broken capscrews or studs, drive wood augers, hole saws and wire brushes.

Check No. 25 on Reply Card for more Details

BIT HOLDER: Continental Screw Co., New Bedford, Mass., offers a redesigned Hy-Pro Phillips insert bit holder. It is permanently rigid, essentially a one-piece, solid tool for mass production power driving or small scale hand driving of Phillips recessed head screws.

Check No. 26 on Reply Card for more Details

FOR MORE INFORMATION

on the new products and equipment in this section, fill in a card. It will receive prompt attention.

Semifinished and Finished Steel Products

All prices quoted under GCPR as reported to STEEL Feb. 22, 1951; cents per pound except as otherwise noted. Changes shown in italics. Code numbers following mill points indicate producing company; key on next two pages.

INGOTS, Carbon, Forging (NT)
Fontana,Calif. K1 ...$79.00
Munhall,Pa. U5 .....52.00

INGOTS, Alloy (NT)
Detroit R7 .....$54.00
Fontana,Calif. K1 ....80.00
Houston,Tex. S5 .....62.00
Midland,Pa. C18 .....54.00
Munhall,Pa. U5 .....54.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bessemer,Pa. U5 ....$56.00
Clairton,Pa. U5 .....56.00
Ensley,Ala. T2 .....56.00
Fairfield,Ala. T2 .....56.00
Fontana,Calif. K1 ....75.00
Gary,Ind. U5 .....56.00
Johnstown,Pa. B2 ....56.00
Lackawanna,N.Y. B2 ..56.00
Munhall,Pa. U5 .....56.00
So.Chicago,Ill. U5 ....56.00
So.Duquesne,Pa. U5 ..56.00

Carbon, Forging (NT)
Bessemer,Pa. U5 ....$66.00
Buffalo R2 .....66.00
Canton,O. R2 .....66.00
Clairton,Pa. U5 .....66.00
Cleveland R2 .....66.00
Conshohocken,Pa. A3 ..73.00
Detroit R7 .....69.00
Ensley,Ala. T2 .....66.00
Fairfield,Ala. T2 .....66.00
Fontana,Calif. K1 ....85.00
Gary,Ind. U5 .....66.00
Geneva,Utah G1 .....66.00
Houston,Tex. S5 .....74.00
Johnstown,Pa. B2 ....66.00
Lackawanna,N.Y. B2 ..66.00
LosAngeles B3 .....85.00
Munhall,Pa. U5 .....66.00
Seattle B3 .....85.00
So.Chicago R2, U5, W14..66.00
So.Duquesne,Pa. U5 ..66.00
So.SanFrancisco B3 ..85.00

Alloy, Forging (NT)
Bethlehem,Pa. B3 ...$70.00
Buffalo R2 .....70.00
Canton,O. R2 .....70.00
Canton,O.(29) T7 .....66.00
Conshohocken,Pa. A3 ...77.00
Detroit R7 .....73.00
Fontana,Calif. K1 ....89.00
Gary,Ind. U5 .....70.00
Houston,Tex. S5 .....78.00
Ind.Harbor,Ind. Y1 ...70.00
Johnstown,Pa. B2 ....70.00
Lackawanna,N.Y. B2..70.00
LosAngeles B3 .....90.00
Massillon,O. R2 .....70.00
Midland,Pa. C18 .....70.00
Munhall,Pa. U5 .....70.00
So.Chicago R2,U5,W14..70.00
So.Duquesne,Pa. U5 ..70.00
Struthers,O. Y1 .....70.00
Warren,O. C17 .....70.00

ROUNDS, SEAMLESS TUBE (NT)
Canton,O. R2 .....$82.00
Cleveland R2 .....82.00
Fontana,Calif. K1 ...103.00
Gary,Ind. U5 .....82.00
Massillon,O. R2 .....82.00
So.Chicago,Ill. R2 ....82.00
So.Duquesne,Pa. U5 ..82.00

SHEET BARS (NT)
Fontana,Calif. K1 ...$89.00

SKELP
Aliquippa,Pa. J5 .....3.45
Munhall,Pa. U5 .....3.35
Warren,O. R2 .....3.35
Youngstown R2, U5 ...3.35

WIRE RODS
AlabamaCity,Ala. R2 ..4.10
Buffalo W12 .....4.10
Cleveland A7 .....4.10
Donora,Pa. A7 .....4.10
Fairfield,Ala. T2 .....4.10
Fontana,Calif. K1 ....4.90
Houston,Tex. S5 .....4.50
Johnstown,Pa. B2 ....4.10
Joliet,Ill. A7 .....4.10
LosAngeles B3 .....4.90
Minnequa,Colo. C10 ....4.35
Monessen,Pa. P7 .....4.30
No.Tonawanda,N.Y.B11 4.10
Pittsburg,Calif. C11 ....4.75
Portsmouth,O. P12 ....4.30
Roebling,N.J. R5 .....4.20
So.Chicago,Ill. R2 ....4.10
SparrowsPoint,Md. B2 ..4.20
Sterling,Ill.(1) N15 ....4.10
Struthers,O. Y1 .....4.10
Torrance,Calif. C11 ....4.90
Worcester A7 .....4.40

STRUCTURALS
Carbon Steel Stand. Shapes
AlabamaCity,Ala. R2 ..3.60
Aliquippa,Pa. J5 .....3.65
Bessemer,Ala. T2 .....3.65
Bethlehem,Pa. B2 .....3.70
Clairton,Pa. U5 .....3.65
Fairfield,Ala. T2 .....3.65
Fontana,Calif. K1 .....4.25
Gary,Ind. U5 .....3.65
Geneva,Utah G1 .....3.65
Houston,Tex. S5 .....4.05
Ind.Harbor,Ind. I-2 ....3.65
Johnstown,Pa. B2 .....3.70
KansasCity,Mo. S5 ....4.25
Lackawanna,N.Y. B2 ..3.70
LosAngeles B3 .....4.25
Minnequa,Colo. C10 ....4.10
Munhall,Pa. U5 .....3.65
Niles,Calif.(22) P1 ....4.85
Phoenixville,Pa. P4 ....4.95
Portland,Oreg. O4 .....4.50
Seattle B3 .....4.30
So.Chicago,Ill. U5, W14..3.65
So.SanFrancisco B3 ....4.20
Torrance,Calif. C11 ....4.25
Weirton,W.Va. W6 ....3.90

Alloy Stand. Shapes
Clairton,Pa. U5 .....4.35
Fontana,Calif. K1 .....5.55
Munhall,Pa. U5 .....4.35
So.Chicago,Ill. U5 .....4.35

H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 .....5.50
Bessemer,Ala. T2 .....5.50
Bethlehem,Pa.(14) B2 ..5.50
Clairton,Pa. U5 .....5.50
Fairfield,Ala. T2 .....5.50
Fontana,Calif. K1 ....6.10
Gary,Ind. U5 .....5.50
Geneva,Utah G1 .....5.50
Ind.Harbor,Ind. I-2 ....5.50
Ind.Harbor,Ind. Y1 ....6.00
Johnstown,Pa. B2 .....5.50
Lackawanna,N.Y.(14)B2 5.50
LosAngeles B3 .....6.06
Munhall,Pa. U5 .....5.50
Seattle B3 .....6.10
So.Chicago,Ill. U5 .....5.50
So.SanFrancisco B3 ....6.00
Struthers,O. Y1 .....6.00

Wide Flange
Bethlehem,Pa. B2 .....3.70
Clairton,Pa. U5 .....3.65
Fontana,Calif. K1 .....4.65
Lackawanna,N.Y. B2 ..3.70
Munhall,Pa. U5 .....3.65
So.Chicago,Ill. U5 .....3.65

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 .....5.50
Lackawanna,N.Y. B2 ..5.50
Munhall,Pa. U5 .....5.45
So.Chicago,Ill. U5 .....5.45

SHEET STEEL PILING
Ind.Harbor,Ind. I-2 ....4.45
Lackawanna,N.Y. B2 ...4.45
Munhall,Pa. U5 .....4.45
So.Chicago,Ill. U5 .....4.45

BEARING PILES
Munhall,Pa. U5 .....3.65
So.Chicago,Ill. U5 .....3.65

PLATES,High-Strength Low-Alloy
Aliquippa,Pa. J5 .....5.65
Bessemer,Ala. T2 .....5.65
Clairton,Pa. U5 .....5.65
Cleveland J5, R2 .....5.65
Conshohocken,Pa. A3 ..5.90
Fairfield,Ala. T2 .....5.65
Fontana,Calif.(30) K1 ..6.25
Gary,Ind. U5 .....5.65
Geneva,Utah G1 .....5.65
Ind.Harbor,Ind. I-2 ....5.65
Ind.Harbor,Ind. Y1 ....6.15
Johnstown,Pa. B2 .....5.65
Munhall,Pa. U5 .....5.65
Pittsburgh J5 .....5.65
Seattle B3 .....6.55
Sharon,Pa. S3 .....5.70
So.Chicago,Ill. U5 .....5.65
SparrowsPoint,Md. B2 ..5.65
Warren,O. R2 .....5.65
Youngstown Y1 .....6.15

PLATES, Open-Hearth Alloy
Claymont,Del. W16 ....4.85
Coatesville,Pa. L7 ....5.25
Conshohocken,Pa. A3 ..5.05
Fontana,Calif. K1 .....5.70
Gary,Ind. U5 .....4.75
Johnstown,Pa. B2 .....4.75
Munhall,Pa. U5 .....4.75
Sharon,Pa. S3 .....5.20
So.Chicago,Ill. U5 .....4.75
SparrowsPoint,Md. B2..4.75

FLOOR PLATES
Cleveland J5 .....4.75
Conshohocken,Pa. A3 ..4.75
Harrisburg,Pa. C5 ....5.95
Ind.Harbor,Ind. I-2 ....4.75
Munhall,Pa. U5 .....4.75
So.Chicago,Ill. U5 .....4.75

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..3.70
Aliquippa,Pa. J5 .....3.70
Ashland,Ky.(15) A10 ..3.70
Bessemer,Ala. T2 .....3.70
Clairton,Pa. U5 .....3.70
Claymont,Del. W16 ....4.15
Cleveland J5, R2 .....3.70
Coatesville,Pa. L7 .....4.15
Conshohocken,Pa. A3 ..4.15
Fairfield,Ala. T2 .....3.70
Fontana,Calif.(30) K1 ..4.30
Gary,Ind. U5 .....3.70
GraniteCity,Ill. G4 ....4.40
Geneva,Utah G1 .....3.70
Harrisburg,Pa. C5 ....4.95
Houston,Tex. S5 .....4.10
Ind.Harbor,Ind. I-2, Y1.3.70
Johnstown,Pa. B2 .....3.70
Lackawanna,N.Y. B2 ..3.70
Minnequa,Colo. C10 ....4.50
Munhall,Pa. U5 .....3.70
Pittsburgh J5 .....3.70
Seattle B3 .....4.60
Sharon,Pa. S3 .....3.95
So.Chicago,Ill. U5, W14.3.70
SparrowsPoint,Md. B2..3.70
Steubenville,O. W10 ...3.70
Warren,O. R2 .....3.70
Weirton,W.Va. W6 ....4.00
Youngstown R2, U5, Y1.3.70

PLATES, Carbon A.R.
Fontana,Calif. K1 ....5.45
Geneva,Utah G1 .....4.85

PLATES, Wrought Iron
Economy,Pa. B14 .....8.60

PLATES, Ingot Iron
Asland,c.l.(15) A10 ...3.95
Ashland,lcl.(15) A10 ...4.45
Cleveland,c.l. R2 .....4.30
Warren,O. c.l. R2 .....4.30

BARS, Hot-Rolled Carbon
AlabamaCity,Ala. R2 ..3.70
Aliquippa,Pa. J5 .....3.70
Alton,Ill.(1) L1 .....3.95
Atlanta,Ga. A11 .....4.25
Bessemer,Ala. T2 .....3.70
Buffalo R2 .....3.70
Canton,O. R2 .....3.70
Clairton,Pa. U5 .....3.70
Cleveland R2 .....3.70
Detroit R7 .....3.85
Emeryville,Calif. J7 ...4.45
Fairfield,Ala. T2 .....3.70
Fontana,Calif. K1 .....4.40
Gary,Ind. U5 .....3.70
Houston,Tex. S5 .....4.10
Ind.Harbor,Ind. I-2 Y1.3.70
Johnstown,Pa. B2 .....3.70
KansasCity,Mo. S5 .....4.30
Lackawanna,N.Y. B2 ..3.70
LosAngeles B3 .....4.40
Milton,Pa. B6 .....4.20
Minnequa,Colo. C10 ....4.15
Niles,Calif. P1 .....5.05
N.Tonawanda,N.Y. B11.3.70
Pittsburg,Calif. C11 ....4.40
Pittsburgh J5 .....3.70
Portland,Oreg. O4 .....4.65
Seattle B3, N14 .....4.45
So.Chicago R2, U5, W14.3.70
So.Duquesne,Pa. U5 ...3.70
So.SanFran.,Cal. B3 ...4.45
Struthers,O. Y1 .....3.70
Torrance,Calif. C11 ....4.40
Weirton,W.Va. W6 ....3.85
Youngstown R2, U5 ...3.70

BAR SIZE ANGLES; S. SHAPES
Aliquippa,Pa. J5 .....3.70
Atlanta A11 .....4.25
Johnstown,Pa. B2 .....3.70
Lackawanna,N.Y. B2 ..3.70
Niles,Calif. P1 .....5.05
Portland,Oreg. O4 .....4.65
SanFrancisco S7 .....4.85

BAR SIZE ANGLES; H.R.CARBON
Bethlehem,Pa. B2 .....3.90

BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 .....4.30
Buffalo R2 .....4.30
Canton,O. R2 .....4.30
Canton,O.(29) T7 .....3.95
Clairton,Pa. U5 .....4.30
Detroit R7 .....4.45
Ecorse,Mich. G5 .....4.65
Fontana,Calif. K1 ....5.35
Gary,Ind. U5 .....4.30
Houston,Tex. S5 .....4.70
Ind.Harbor,Ind. I-2, Y1.4.30
Johnstown,Pa. B2 .....4.30
KansasCity,Mo. S5 .....4.90
Lackawanna,N.Y. B2 ..4.30
LosAngeles B3 .....5.35
Massillon,O. R2 .....4.30
Midland,Pa. C18 .....4.30
So.Chicago R2, U5, W14.4.30
So.Duquesne,Pa. U5 ...4.30
Struthers,O. Y1 .....4.30
Warren,O. C17 .....4.30
Youngstown U5 .....4.30

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. U5 .....4.55
Gary,Ind. U5 .....4.55
Youngstown U5 .....4.55

BARS & SMALL SHAPES, H.R., High-Strength Low-Alloy
Aliquippa,Pa. J5 .....5.55
Bessemer,Ala. T2 .....5.55
Bethlehem,Pa. B2 .....5.55
Clairton,Pa. U5 .....5.55
Cleveland R2 .....5.55
Fairfield,Ala. T2 .....5.55
Fontana,Calif. K1 .....6.60
Gary,Ind. U5 .....5.55
Ind.Harbor,Ind. I-2 ....5.55
IndianaHarbor,Ind. Y1..6.05
Johnstown,Pa. B2 .....5.55
Lackawanna,N.Y. B2 ...5.55
LosAngeles B3 .....6.25
Pittsburgh J5 .....5.55
Seattle B3 .....6.30
So.Duquesne,Pa. U5 ...5.55
So.SanFrancisco B3 ...6.30
Struthers,O. Y1 .....6.05
Youngstown U5 .....5.55

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ....4.55
BeaverFalls,Pa.M12,R2 .4.55
Buffalo B5 .....4.60
Camden,N.J. P13 .....5.00
Carnegie,Pa. C12 .....4.55
Chicago W18 .....4.55
Cleveland A7, C20 ....4.55
Detroit P17 .....4.70
Donora,Pa. A7 .....4.55
Elyria,O. W8 .....4.55
FranklinPark,Ill. N5 ...4.55
Gary,Ind. R2 .....4.55
GreenBay,Wis. F7 ....4.55
Hammond,Ind. I.2, M13.4.55
Hartford,Conn. R2 .....5.10
Harvey,Ill. B5 .....4.55
LosAngeles R2 .....6.00
Mansfield,Mass. B5 ...5.10
Massillon,O. R2, R8 ...4.55
Monaca,Pa. S17 .....4.55
Newark,N.J. W18 .....5.00
Plymouth,Mich. P5 .....4.80
Pittsburgh J5 .....4.55
Putnam,Conn. W18 .....5.10
Readville,Mass. C14 ...5.10
St. Louis,Mo. M5 .....4.95
So.Chicago,Ill. W14 ....4.55
SpringCity,Pa.(5) K3 ...5.00
Struthers,O. Y1 .....4.55
Waukegan,Ill. A7 .....4.55
Youngstown F3, Y1 ...4.55

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ....5.40
BeaverFalls,Pa. M12 ...5.40
Bethlehem,Pa. B2 .....5.40
Buffalo B5 .....5.40
Camden,N.J. P13 .....5.80
Canton,O. R2 .....5.40
Canton,O.(29) T7 .....4.90
Carnegie,Pa. C12 .....5.40
Chicago W18 .....5.40
Cleveland A7 .....5.45
Cleveland C20 .....5.40
Detroit P17 .....5.55
Donora,Pa. A7 .....5.45
Elyria,O. W8 .....5.40
Gary,Ind. R2 .....5.40
Hammond,Ind. I.2, M13.5.40
Hartford,Conn. R2 .....5.85
Harvey,Ill. B5 .....5.40
Lackawanna,N.Y. B2 ...5.40
Mansfield,Mass. B5 ....5.85
Massillon,O. R2, R8 ...5.40
Midland,Pa. C18 .....5.40
Monaca,Pa. S17 .....5.40
Newark,N.J. W18 .....5.75
Plymouth,Mich. P5 .....5.60
So.Chicago,Ill. R2, W14.5.40
Struthers,O. Y1 .....5.40
Warren,O. C17 .....5.40
Waukegan,Ill. A7 .....5.45
Worcester,Mass. A7 ...5.75
Youngstown F3, Y1 ...5.40

RAIL STEEL BARS
ChicagoHts.(3,4)I-2, C2.4.75
Franklin,Pa.(3, 4)-F5 ..4.75
FortWorth,Tex.(26) T4..5.40
Huntngtn,W.Va.(3) W7 .5.50
Marion,O.(3) P11 .....4.75
Moline,Ill.(3) R2 .....3.80
Tonawanda(3,4) B12 ....4.75
Williamsport(3) S19 ....5.00
Williamsport(4) S19 ....5.10

BARS, Wrought Iron
Dover,N.J.(Staybolt)U1 15.00
Dover,(Eng.Bolt) U1 ...13.50
Dover(Wrgt.Iron) U1 ...12.25
Economy,Pa.(S.R.) B14 .9.60
Economy,Pa.(D.R.)B14 11.90
Economy(Staybolt)B14 12.20
McK.Rks.(Staybolt) L5..14.50
McK.Rks.(S.R.) L5 ....9.60
McK.Rks.(D.R.) L5 ...13.00

BARS, Reinforcing (Fabricators)
AlabamaCity,Ala. R2 ..3.70
Alton,Ill.(6) L1 .....3.70
Atlanta A11 .....4.25
Buffalo R2 .....3.70
Cleveland R2 .....3.70
Emeryville,Calif. J7 ...4.45
Fairfield,Ala. T2 .....3.70
Fontana,Calif. K1 .....4.40
Gary,Ind. U5 .....3.70
Houston,Tex. S5 .....4.10
Ind.Harbor,Ind. I-2, Y1.3.70
Johnstown,Pa. B2 .....3.70
KansasCity,Mo. S5 ....4.30
Lackawanna,N.Y. B2 ..3.70
LosAngeles B3 .....4.40
Milton,Pa. B6 .....4.20
Minnequa,Colo. C10 ....4.50
Niles,Calif. P1 .....5.05
Pittsburg,Calif. C11 ....4.40
Pittsburgh J5 .....3.70
Portland,Oreg. O4 .....4.65
SandSprings,Okla. S5 ..4.60
Seattle B3, N14 .....4.45
So.Chicago,Ill. R2 .....3.70
So.Duquesne,Pa. U5 ...3.70
So.SanFrancisco B3 ....4.45
SparrowsPoint,Md. B2 ..3.70
Struthers,O. Y1 .....3.70
Torrance,Calif. C11 ....4.40
Youngstown R2, U5 ...3.70

BARS, Reinforcing (Fabricated; to Consumers)
Huntington,W.Va. W7 ..5.50
Johnstown, ¼-1" B2 ..4.75
LosAngeles B3 .....5.45
Marion,O. P11 .....5.00
Seattle B3, N14 .....5.55
So.SanFrancisco B3 ....5.45
SparrowsPt. ¼-1" B2..4.75
Williamsport,Pa. S19 ...5.10

SHEETS, Hot-Rolled Steel (18 gage and heavier)
AlabamaCity,Ala. R2 ..3.60
Ashland,Ky.(8) A10 ..3.60
Butler,Pa. A10 .....3.60
Cleveland J5, R2 .....3.60
Conshohocken,Pa. A3 ..4.00
Detroit M1 .....4.40
Ecorse,Mich.(8) G5 ....3.80
Fairfield,Ala. T2 .....3.60
Fontana,Calif. K1 .....4.55
Gary,Ind. U5 .....3.60
Geneva,Utah G1 .....3.70
GraniteCity,Ill. G4 ....4.30
Ind.Harbor,Ind. I-2, Y1.3.60
Irvin,Pa. U5 .....3.60
Lackawanna,N.Y. B2 ..3.60
Munhall,Pa. U5 .....3.60
Niles,O. N12 .....5.25
Pittsburg,Calif. C11 ....4.30
Pittsburgh J5 .....3.60
Sharon,Pa. S3 .....4.00
So.Chicago,Ill. W14 ..3.60
SparrowsPoint,Md. B2 ..3.60
Steubenville,O. W10 ...3.60
Torrance,Calif. C11 ....4.30
Warren,O. R2 .....3.60
Weirton,W.Va. W6 ....3.60
WestLeechburg,Pa. A4..3.75
Youngstown U5, Y1 ...3.60

SHEETS, H-R (19 gage)
AlabamaCity,Ala. R2 ..4.75
Dover,O. R1 .....5.65
Ind.Harbor,Ind. I-2 ....5.40
Mansfield,O. E6 .....5.65
Niles,O. N12 .....5.75
Torrance,Calif. C11 ....5.40

SHEETS, H-R (14-ga., heavier) High-Strength Low-Alloy
Cleveland J5, R2 .....5.40
Conshohocken,Pa. A3 ..5.65
Ecorse,Mich. G5 .....5.95
Fairfield,Ala. T2 .....5.40
Fontana,Calif. K1 .....6.35
Gary,Ind. U5 .....5.40
Ind.Harbor,Ind. I-2 ....5.40
IndianaHarbor,Ind. Y1..5.90
Irvin,Pa. U5 .....5.40
Lackawanna(35) B2 ...5.40
Pittsburgh J5 .....5.40
Sharon,Pa. S3 .....5.40
So.Chicago,Ill. U5 .....5.40
SparrowsPoint(36) B2 ..5.40
Warren,O. R2 .....5.40
Weirton,W.Va. W6 ....5.75
Youngstown U5 .....5.40
Youngstown Y1 .....5.90

SHEETS, Cold-Rolled High-Strength Low-Alloy
Cleveland J5, R2 .....6.55
Ecorse,Mich. G5 .....7.10
Fontana,Calif. K1 .....7.50
Gary,Ind. U5 .....6.55
IndianaHarbor,Ind. Y1 ..7.05
IndianaHarbor,Ind. I-2 ..6.55
Irvin,Pa. U5 .....6.55
Lackawanna(37) B2 ...6.55
Pittsburgh J5 .....6.55
SparrowsPoint(38) B2 ..6.55
Warren,O. R2 .....6.55
Weirton,W.Va. W6 ....6.90
Youngstown Y1 .....7.05

SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler,Pa. A10	4.35
Cleveland J5, R2	4.35
Ecorse,Mich. G5	4.55
Fairfield,Ala. T2	4.35
Follansbee,W.Va. F4	5.35
Fontana,Calif. K1	5.30
Gary,Ind. U5	4.35
GraniteCity,Ill. G4	5.95
Ind.Harbor,Ind. I-2, Y1	4.35
Irvin,Pa. U5	4.35
Lackawanna,N.Y. B2	4.35
Middletown,O. A10	4.35
Pittsburg,Calif. C11	5.30
Pittsburgh J5	4.35
SparrowsPoint,Md. B2	4.35
Steubenville,O. W10	4.35
Warren,O. R2	4.35
Weirton,W.Va. W6	4.35
Youngstown Y1	4.35

SHEETS, Galv'd No. 10 Steel

AlabamaCity,Ala., R2	4.80
Ashland,Ky.(8) A10	4.80
Canton,O. R2	4.80
Dover,O. R1	5.50
Fairfield,Ala. T2	4.80
Gary,Ind. U5	4.80
GraniteCity,Ill. G4	5.50
Ind.Harbor,Ind. I-2	4.80
Irvin,Pa. U5	4.80
Kokomo,Ind.(13) C16	5.20
MartinsFerry,O. W10	4.80
Niles,O. N12	6.00
Pittsburg,Calif. C11	5.55
SparrowsPoint,Md. B2	4.80
Steubenville,O. W10	4.80
Torrance,Calif. C11	5.55
Weirton,W.Va. W6	4.80

SHEETS, Galvanized No. 10, High-Strength Low-Alloy

Irvin,Pa. U5	7.20
SparrowsPoint(39) B2	6.75

SHEETS, Galvannealed Steel

Canton,O. R2	5.35
Irvin,Pa. U5	5.35
Kokomo,Ind.(13) C16	5.75
Niles,O. N12	6.55

SHEETS, ZINCGRIP Steel No. 10

Butler,Pa. A10	5.05
Middletown,O. A10	5.05

SHEETS, Electro Galvanized

Cleveland R2 (28)	5.65
Niles,O. R2 (28)	5.65
Weirton,W.Va. W6	5.50

SHEETS, Zinc Alloy

Ind.Harbor,Ind. I-2	5.70

SHEETS, Drum Body

Pittsburg,Calif. C11	4.30
Torrance,Calif. C11	4.30

SHEETS, Well Casing

Fontana,Calif. K1	5.10
Torrance,Calif. C11	5.10

BLUED Stock, 29 Ga.

Yorkville,O. W10	6.80
Follansbee,W.Va.(23) F4	6.85

ROOFING SHORT TERNES (8 lb coated)

Gary,Ind. U5	9.50

MANUFACTURING TERNES (Special Coated)

Fairfield,Ala. T2	$7.60
Gary,Ind. U5	7.50
Irvin,Pa. U5	7.50
SparrowsPoint,Md. B2	7.60
Yorkville,O. W10	7.50

SHEETS, Lt. Coated Ternes, 6lb

Yorkville,O. W10	$8.40

SHEETS, Mfg. Ternes, 8 lb (Comercial Quality)

Gary,Ind. U5	$9.50
Yorkville,O. W10	9.50

SHEETS, Long Terne Steel (Commercial Quality)

BeechBottom,W.Va.W10	5.20
Gary,Ind. U5	5.20
Mansfield,O. E6	6.05
Middletown,O. A10	5.20
Niles,O. N12	6.00
Weirton,W.Va. W6	5.20

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10	5.60

SHEETS, Enameling Iron

Ashland,Ky.(8) A10	4.65
Cleveland R2	4.65
Gary,Ind. U5	4.65
GraniteCity,Ill. G4	5.35
Ind.Harbor,Ind. I-2	4.65
Irvin,Pa. U5	4.65
Middletown,O. A10	4.65
Youngstown Y1	4.65

SHEETS, Culvert	**Cu**	**Cu**
No. 16	**Alloy**	**Fe**
Ashland A10	5.60	...
Canton,O. R2	5.65	6.10
Fairfield,Ala. T2	5.60	5.85
Gary U5	5.60	5.85
IndianaHarbor I-2	5.60	5.85
Irvin,Pa. U5	5.60	5.85
Kokomo C16	6.25	...
MartinsFy.O. W10	5.60	5.85
Pittsburg,Cal. C11	6.35	...
SparrowsPt. B2	5.60	...
Torrance,Cal. C11	6.35	...

SHEETS, Culvert, No. 16 Pure Iron

Ashland,Ky. A10	5.85
Fairfield,Ala. T2	5.85

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier

Ashland(8) A10	3.85
Cleveland R2	4.20
Ind.Harbor,Ind. I-2	3.85
Warren,O. R2	4.20

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2	4.95
Middletown,O. A10	4.85
Warren,O. R2	4.95

SHEETS, Galvanived Ingot Iron No. 10 flat

Ashland,Ky.(8) A10	5.05
Canton,O. R2	5.55

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10	5.30
Middletown,O. A10	5.30

SHEETS, ALUMINIZED

Butler,Pa. A10	8.15

TIN PLATE, Electrolytic (Base Box)	**0.25 lb**	**0.50 lb**	**0.75 lb**
Aliquippa,Pa. J5	$7.15	$7.40	$7.80
Fairfield,Ala. T2	7.25	7.50	7.90
Gary,Ind. U5	7.15	7.40	7.80
GraniteCity,Ill. G4	7.35	7.60	8.00
Ind.Harbor,Ind. I-2, Y1	7.15	7.40	7.80
Irvin,Pa. U5	7.15	7.40	7.80
Niles,O. R2	7.15	7.40	7.80
Pittsburg,Calif. C11	7.90	8.15	8.55
SparrowsPoint,Md. B2	7.25	7.50	7.90
Weirton,W.Va. W6	7.15	7.40	7.80
Yorkville,O. W10	7.15	7.40	7.80

SHEETS, SILICON, H.R. or C.R.(22 Ga.) COILS (Cut Lengths ½c lower)	**Field**	**Arma-ture**	**Elec-tric**	**Motor**	**Dyna-mo**
BeechBottom W10 (cut lengths)	...	...	7.25	8.50	9.30
Brackenridge,Pa. A4	...	...	7.75	9.00	9.80
GraniteCity,Ill.G4 (cut lengths)	...	...	7.95	9.20	...
Ind.Harbor,Ind. I-2	6.95	7.25	(34)	...	...
Mansfield,O. E6 (cut lengths)	7.10	7.25	7.75	9.00	9.80
Niles,O. N12 (cut lengths)	...	6.75	7.25	...	...
Vandergrift,Pa. U5	...	7.25	7.75	9.00	9.80
Warren,O. R2	6.95	7.25	7.75	9.00	9.80
Zanesville,O. A10	...	7.25	7.75	9.00	9.80

SHEETS, SILICON (22 Ga. Base) Coils (Cut Lengths ½c lower) Transformer Grade	**72**	**65**	**58**	**52**
BeechBottom W10 (cut lengths)	9.85	10.40	11.10	11.90
Brackenridge,Pa. A4	10.35	...	...	...
Vandergrift,Pa. U5	10.35	10.90	11.60	12.40
Warren,O. R2	10.35	...	...	...
Zanesville,O. A10	10.35	10.90	11.60	12.40

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)	**T-100**	**T-90**	**T-80**	**T-73**
Butler,Pa. A10 (C.R.)	...	...	14.75	15.25
Vandergrift,Pa. U5	12.90	13.75	14.75	15.25

TIN PLATE, American Coke (Base Box)	**1.25 lb**	**1.50 lb**
Aliquippa J5	$8.45	$8.70
Fairfield,Ala. T2	8.55	8.80
Gary U5	8.45	8.70
Ind.Har. I-2, Y1	8.45	8.70
Irvin,Pa. U5	8.45	8.70
Pitts.,Cal. C11	9.20	9.45
Sp.Pt.,Md. B2	8.55	8.80
Warren R2	8.45	8.70
Weirton W6	8.45	8.70
Yorkville,O. W10	8.45	8.70

BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$6.25
Fairfield,Ala. T2	6.35
Gary,Ind. U5	6.25
GraniteCity,Ill. G4	6.45
Ind.Harbor,Ind. I-2, Y1	6.25
Irvin,Pa. U5	6.25
Niles,O. R2	6.25
Pittsburg,Calif. C11	7.00
SparrowsPoint,Md. B2	6.35
Warren,O. R2	6.25
Weirton,W.Va. W6	6.25
Yorkville,O. W10	6.25

HOLLOWARE ENAMELING Black Plate (29 gage)

Follansbee,W.Va. F4	5.85
Gary,Ind. U5	5.85
GraniteCity,Ill. G4	6.05
Ind.Harbor,Ind. Y1	5.30
Irvin,Pa. U5	5.85
Yorkville,O. W10	6.15

STRIP, Hot-Rolled Alloy

Bridgeprt,Conn.(10) S15	5.45
Carnegie,Pa. S18	5.85
Fontana,Calif. K1	6.70
Gary,Ind. U5	5.50
Houston,Tex. S5	5.90
KansasCity,Mo. S5	6.10
Midland,Pa. C18	5.85
NewBritn,Conn.(10) S15	5.45
Sharon,Pa. S8	5.85
Youngstown U5	5.50

STRIP, Hot-Rolled, High-Strength Low-Alloy

Bessemer,Ala. T2	5.30
Conshohocken,Pa. A3	5.55
Ecorse,Mich. G5	5.95
Fairfield,Ala. T2	5.30
Fontana,Cal. K1	6.20
Gary,Ind. U5	5.30
Ind.Harb.,Ind. I-2	5.30
IndianaHarbor,Ind. Y1	5.80
Lackawanna,N.Y. B2	4.95
LosAngeles(25) B3	6.05
Seattle B3	6.30
Sharon,Pa. S3	5.40
So.SanFrancisco(25) B3	6.05
SparrowsPoint,Md. B2	4.95
Warren,O. R2	5.30
Weirton,W.Va. W6	5.75
Youngstown Y1	5.80
Youngstown U5	5.30

STRIP, Cold-Rolled, High-Strength Low-Alloy

Cleveland J5	6.70
Cleveland A7	6.55
Dover,O. G6	7.30
Fontana,Calif. K1	6.95
Lackawanna,N.Y. B2	6.40
Sharon,Pa. S3	6.55
SparrowsPoint,Md. B2	6.40
Warren,O. R2	6.55
Weirton,W.Va. W6	7.20
Youngstown Y1	7.05

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	3.50
Alton,Ill.(1) L1	3.75
Ashland,Ky(8) A10	3.50
Atlanta A11	4.05
Bessemer,Ala. T2	3.50
Bridgeprt,Conn.(10) S15	4.00
Buffalo(27) R2	3.50
Butler,Pa. A10	3.50
Carnegie,Pa. S18	4.00
Conshohocken,Pa. A3	3.90
Detroit M1	4.40
Ecorse,Mich. G5	3.80
Fairfield,Ala. T2	3.50
Fontana,Calif. K1	4.75
Gary,Ind. U5	3.50
Houston,Tex. S5	4.90
Ind.Harbor,Ind. I-2, Y1	3.50
Johnstown,Pa.(25) B2	3.50
KansasCity,Mo.(9) S5	4.10
Lackawanna,N.Y.(32) B2	3.50
LosAngeles B3	4.25
Milton,Pa. B6	4.00
Minnequa,Colo. C10	4.55
NewBritain(10) S15	4.00
N.Tonawanda,N.Y. B11	3.50
Pittsburg,Calif. C11	4.25
Riverdale,Ill. A1	3.50
SanFrancisco S7	4.85
Seattle B3, N14	4.50
Sharon,Pa. S3	4.00
So.Chicago,Ill. W14	3.50
So.SanFrancisco B3	4.25
SparrowsPoint,Md. B2	3.50
Torrance,Calif. C11	4.25
Warren,O. R2	3.50
Weirton,W.Va. W6	3.60
WestLeechburg,Pa. A4	3.75
Youngstown U5, Y1	3.50

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10) S15	10.75
Carnegie,Pa. S18	10.60
Cleveland A7	10.00
Dover,O. G6	10.50
Fontana,Calif. K1	11.65
Harrison,N.J. C18	10.60
Midland,Pa. C18	10.60
NewBritn,Conn.(10) S15	10.75

STRIP, Cold-Finished, Spring Steel (Annealed)	**0.26-0.40C**	**0.41-0.60C**	**0.61-0.80C**	**0.81-1.05C**	**1.06-1.35C**
Berea,O. C7	...	6.80	7.40	9.35	11.65
Bridgeport,Conn.(10) S15	5.35	6.80	7.40	9.35	11.65
Bristol,Conn. W1	...	...	7.70	9.65	...
Carnegie,Pa. S18	...	6.80	7.40	9.35	11.65
Cleveland A7	4.65	6.45	7.40	9.35	11.65
Dearborn,Mich. D3	5.60	7.05	7.65	...	...
Detroit D2	5.60	6.65	7.25	...	...
Dover,O. G6	5.50	6.80	7.40	9.35	11.65
FranklinPark,Ill. T6	5.00	6.60	7.55	9.50	11.80
Harrison,N.J. C18	...	...	7.70	9.65	11.95
Mattapan,Mass. T6	5.50	6.75	7.70	9.65	11.95
NewBritn.,Conn.(10) S15	5.35	6.80	7.40	9.35	11.65
NewCastle,Pa. B4	5.35	6.80	7.40	9.35	...
NewCastle,Pa. E5	5.50	6.80	7.40	9.35	11.65
NewHaven,Conn. D2	5.85	6.75	7.35	...	...
NewYork W3	...	7.10	7.70	9.65	11.95
Pawtucket,R.I. N8: Cleve.-or-Pitts.Base	...	6.80	7.40	9.35	11.65
Worcester,Base	5.85	7.10	7.70	9.65	11.95
Sharon,Pa. S3	5.35	6.80	7.40	9.35	11.65
Trenton,N.J. R5	...	7.10	7.70	9.65	11.85
Wallingford,Conn. W2	5.85	6.75	7.35	9.30	11.60
Weirton,W.Va. W6	5.35	6.80	7.40	9.35	11.65
Worcester,Mass. A7	4.95	6.75	7.70	9.65	11.95
Worcester,Mass. T6	5.50	6.75	7.70	9.65	11.95
Youngstown C8	...	6.80	7.40	9.35	11.65
Spring Steel (Tempered)					
Trenton,N.J. R5	...	...	10.30	12.50	15.35
Harrison,N.J. C18	...	...	10.30	12.50	15.35
NewYork W3	...	...	10.30	12.50	15.35
Pawtucket,R.I.(11)					10.75
Pawtucket,R.I.(12)					11.05
Sharon,Pa. S3					10.60
Worcester,Mass. A7					10.30
Youngstown C8					10.60

STRIP, Cold-Rolled Carbon

Anderson,Ind.(40) G6	5.50
Berea,O. C7	6.60
Bridgeprt,Conn.(10) S15	5.35
Butler,Pa. A10	4.65
Cleveland A7, J5	4.65
Dearborn,Mich. D3	5.60
Detroit D2	5.60
Detroit M1	5.45
Dover,O.(40) G6	5.50
Ecorse,Mich. G5	4.85
Follansbee,W.Va. F4	5.35
Fontana,Calif. K1	6.30
FranklinPark,Ill.(40) T6	4.90
Ind.Harbor,Ind. I-2	4.90
Lackawanna,N.Y. B2	4.65
LosAngeles C1	6.40
Mattapan,Mass. T6	5.50
Middletown,O. A10	4.65
NewBritain(10) S15	5.35
NewCastle,Pa. B4	5.35
NewCastle(40) E5	5.25
NewHaven,Conn. D2	5.85
NewHaven,Conn. A7	5.15
Pawtucket,R.I. R3	6.00
Pawtucket,R.I.(21) N8	5.85
Riverdale,Ill.(40) A1	4.90
Rome,N.Y. R6	5.10
Sharon,Pa. S3	5.35
SparrowsPoint,Md. B2	4.65
Trenton,N.J. R5	6.00
Wallingford,Conn. W2	5.85
Warren,O.(40) T5	5.25
Warren,O. R2	4.65
Weirton,W.Va. W6	4.65
Youngstown C8, (40)	5.25
Youngstown Y1	4.65

STRIP, Electro Galvanized

Dover,O. G6	5.50
Warren,O. T5	5.25
Weirton,W.Va. W6	4.65
Youngstown C8	5.25

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.

B1 Babcock & Wilcox Tube
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Boiardi Steel Corp.
B8 Braeburn Alloy Steel
B11 Buffalo Bolt Co.
B12 Buffalo Steel Co.
B14 A. M. Byers Co.

C1 Calif. Cold Rolled Steel
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve.Cold.Roll.Mills Co.
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia Steel Co.
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire

D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.

F2 Firth Sterling Steel
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire

G1 Geneva Steel Co.
G2 Globe Iron Co.
G3 Globe Steel Tubes Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.

H1 Hanna Furnace Corp.
H4 Heppenstall Co.

I-1 Igoe Bros., Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Koppers Co., Inc.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Electric Steel
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	3.75
Warren,O. R2	4.10

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	5.25

TIGHT COOPERAGE HOOP

Atlanta A11	4.05
Riverdale,Ill. A1	3.90
Sharon,Pa. S3	4.15
Youngstown U5	3.75

WIRE, Merchant Quality (6 to 8 gage)

	An'ld	Galv.
AlabamaCity R2	5.70	5.95
Aliquippa J5	5.70	6.15
Atlanta A11	5.95	6.40
Bartonville(18)K4	5.70	6.15
Buffalo W12	4.85	...
Cleveland A7	5.70	6.15
Crawfordsville M8	5.95	6.40
Donora,Pa. A7	5.70	6.15
Duluth A7	5.70	6.15
Fairfield T2	5.70	6.15
Houston,Tex. S5	6.10	6.55
Johnstown B2	5.70	6.15
Joliet,Ill. A7	5.70	6.15
KansasCy,Mo. S5	6.30	6.75
Kokomo C16	5.80	6.05
LosAngeles B3	6.65	...
Minnequa C10	5.95	6.45
Monessen P7	5.95	6.40
Palmer W12	6.15	...
Pitts.Calf. C11	6.65	6.80
Prismth.(18)P12	6.10	6.60
Rankin A7	5.70	6.15
So.Chicago R2	5.70	5.95
So.S.Fran. C10	6.65	7.10
SparrowsPt. B2	5.80	6.25
Sterling,Ill.(1)N15	5.70	6.15
Struthers,O. Y1	5.70	6.15
Torrance,Calf. C11	6.65	...
Worcester A7	6.00	6.45

WIRE (16 gage)

	An'ld Stone	Galv. Stone
Aliquippa J5	10.15	12.15
Bartonville(1) K4	10.25	11.95
Cleveland A7	10.25	12.15
Crawfrdsvle M8	10.30	12.00
Fostoria,O. S1	10.40	13.00
Johnstown B2	10.25	12.15
Kokomo C16	10.25	11.95
Minnequa C10	10.40	12.40
Palmer,Mass. W12	10.25	12.15
Pitts.,Cal. C11	10.60	12.50
Prismth.(18) P12	10.55	12.30
SparrowsPt. B2	10.85	12.25
Waukegan A7	10.25	12.15

ROPE WIRE

	(A)	(B)
Bartonville,Ill. K4	8.55	8.80
Buffalo W12	8.55	8.80
Cleveland A7	8.55	8.80
Donora,Pa. A7	8.55	8.80
Fostoria,O. S1	8.85	9.10
Johnstown,Pa. B2	8.56	8.80
Monessen,Pa. P16	8.55	8.80
Monessen,Pa. P7	8.80	9.05
NewHaven A7	8.85	9.10
Palmer,Mass. W12	8.85	9.10
Portsmouth,O. P12	8.55	8.80
Roebling,N.J. R5	8.85	9.10
SparrowsPt. B2	8.65	8.90
Struthers,O. Y1	8.55	8.80
Trenton,N.J. A7	8.85	9.10
Waukegan,Ill. A7	8.55	8.80
Worcester J4, T6	8.85	9.10

(A) Plow and Mild Plow.
(B) Improved Plow.

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	4.85
Aliquippa,Pa. J5	4.85
Atlanta A11	5.10
Alton,Ill.(1) L1	4.85
Bartonville,Ill.(1) K4	4.85
Buffalo W12	4.85
Chicago W13	4.85
Cleveland A7, C20	4.85
Crawfordsville,Ind. M8	5.10
Donora,Pa. A7	4.85
Duluth A7	4.85
Fairfield,Ala. T2	4.85
Fostoria,O.(24) S1	5.35
Houston S5	5.25
Johnstown,Pa. B2	4.85
Joliet,Ill. A7	4.85
KansasCity,Mo. S5	5.45
Kokomo,Ind. C16	4.95
LosAngeles B3	5.80
Minnequa,Colo. C10	5.10
Monessen,Pa. P7	5.10
Newark, 6-8ga. I-1	5.50
No. Tonawanda B11	4.85
Palmer,Mass. W12	5.15
Pittsburg,Calif. C11	5.80
Portsmouth,O. P12	5.25
Rankin,Pa. A7	4.85
So.Chicago,Ill. R2	4.85
So.SanFrancisco C10	5.80
SparrowsPoint,Md. B2	4.95
Sterling,Ill.(1) N15	4.85
Struthers,O. Y1	4.85
Torrance,Calif. C11	5.80
Waukegan,Ill. A7	4.85
Worcester,Mass. A7, T6	5.15

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	6.20
Buffalo W12	6.35
Cleveland A7	5.85
Crawfordsville,Ind. M8	6.20
Detroit D2	6.20
Dover,O. G6	6.20
Fostoria,O. S1	6.00
Kokomo,Ind. C16	5.70
FranklinPark,Ill. T6	6.20
Massillon,O. R8	5.85
Monessen,Pa. P16	5.85
Monessen,Pa. P7	6.10
NewHaven,Conn. D2	6.50
Pawtucket,R.I.(12) N8	6.85
Trenton,N.J. R5	6.15
Worcester A7	6.15
Worcester T6	6.50
Worcester W12	6.65

WIRE, Fine & Weaving(8" Coils)

Bartonville,Ill.(1) K4	8.90
Buffalo W12	8.90
Chicago W13	8.90
Cleveland A7	8.90
Crawfordsville,Ind. M8	8.95
Fostoria,O. S1	8.90
Johnstown,Pa. B2	8.90
Kokomo,Ind. C16	8.90
Monessen,Pa. P16	8.90
Palmer,Mass. W12	9.20
Portsmouth,O. P12	8.90
Roebling,N.J. R5	9.20
Waukegan,Ill. A7	8.90
Worcester,Mass. A7, T6	9.20

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K4	8.50
Monessen,Pa. P16	8.50
Roebling,N.J. R5	8.80
SparrowsPoint,Md. B2	8.60
Johnstown,Pa. B2	8.50

WIRE, Tire Bead

Bartonville,Ill.(1) K4	10.90
Monessen,Pa. P16	11.40
Roebling,N.J. R5	11.55

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5	6.25
Alton,Ill.(1) L1	6.25
Bartonville,Ill.(1) K4	6.25
Buffalo W12	6.25
Cleveland A7	6.25
Donora,Pa. A7	6.25
Duluth A7	6.25
Fostoria,O. S1	6.25
Johnstown,Pa. B2	6.25
LosAngeles B3	7.20
Milbury,Mass.(12) N6	8.05
Monessen,Pa. P7, P16	6.25
Palmer,Mass. W12	6.55
Pittsburg,Calif. C11	7.20
Roebling,N.J. R5	6.55
Portsmouth,O. P12	6.25
So.Chicago,Ill. R2	6.25
So.SanFrancisco C10	6.85
SparrowsPoint,Md. B2	6.35
Struthers,O. Y1	6.25
Trenton,N.J. A7	6.55
Waukegan,Ill. A7	6.25
Worcester A7, T6, W12	6.55
Worcester,Mass. J4	6.75

WIRE, Upholstery Spring

Aliquippa,Pa. J5	5.90
Alton,Ill.(1) L1	5.90
Buffalo W12	5.90
Cleveland A7	5.90
Donora,Pa. A7	5.90
Duluth A7	5.90
Johnstown,Pa. B2	5.90
LosAngeles B3	6.85
Monessen,Pa. P7, P16	5.90
NewHaven,Conn. A7	6.20
Palmer,Mass. W12	6.20
Pittsburg,Calif. C11	7.10
Portsmouth,O. P12	5.90
Roebling,N.J. R5	6.20
So.Chicago,Ill. R2	5.90
SparrowsPoint,Md. B2	6.00
Torrance,Calif. C11	7.10
Trenton,N.J. A7	6.20
Waukegan,Ill. A7	5.90
Worcester,Mass. A7	6.20

WOVEN FENCE, 9-15½ Ga. Col

AlabamaCity,Ala. R2	126
Ala.City,Ala.,17-18ga.R2	213
Aliquippa,Pa.9-14½ga.J5	130
Atlanta A11	133
Bartonville,Ill.(19) K4	130
Crawfordsville,Ind. M8	132
Donora,Pa. A7	130
Duluth A7	130
Fairfield,Ala. T2	130
Houston,Tex. S5	138
Johnstown,Pa. B2	130
Johnstown,17ga.,6" B2	204
Johnstown,17ga.,4" B2	207
Joliet,Ill. A7	130
KansasCity,Mo. S5	142
Kokomo,Ind. C16	132
Minnequa,Colo. C10	138
Monessen,Pa. P7	135
Pittsburg,Calif. C11	153
Portsmouth,O.(18) P12	137
Rankin,Pa. A7	130
So.Chicago,Ill. R2	126
Sterling,Ill.(1) N15	130

FENCE POSTS

	Col.
ChicagoHts.,Ill. C2	140
Duluth A7	125
Franklin,Pa. F5	140
Huntington,W.Va. W7	140
Johnstown,Pa. B2	140
Marion,O. P11	140
Minnequa,Colo. C10	130
Moline,Ill. R2	136
So.Chicago R2	140
Tonawanda B12	140
Williamsport,Pa. S19	150

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	136
Aliquippa,Pa. J5	140
Atlanta A11	143
Bartonville,Ill.(19) K4	143
Crawfordsville M8	145
Donora,Pa. A7	140
Duluth,Minn. A7	140
Fairfield,Ala. T2	140
Houston,Tex. S5	148
Johnstown,Pa. B2	140
Joliet,Ill. A7	140
KansasCity,Mo. S5	152
Kokomo,Ind. C16	142
Minnequa,Colo. C10	146
Monessen,Pa. P7	145
Pittsburg,Calif. C11	160
Portsmouth,O.(18) P12	147
Rankin,Pa. A7	140
So.Chicago,Ill. R2	136
So.SanFran.,Calif. C10	160
SparrowsPoint,Md. B2	142
Sterling,Ill.(1) N15	140

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	123
Atlanta A11	126
Bartonville,Ill.(19) K4	123
Chicago W13	123
Crawfordsville M8	132
Donora,Pa. A7	123
Duluth A7	123
Fairfield,Ala. T2	123
Joliet,Ill. A7	123
KansasCity,Mo. S5	135
Kokomo,Ind. C16	125
Minnequa,Colo. C10	128
Pittsburg,Calif. C11	147
So.Chicago,Ill. R2	123
So.SanFran.,Calif. C10	147
SparrowsPoint,Md. B2	125
Sterling,Ill.(1) N15	123

NAILS & STAPLES, Non-Stock

AlabamaCity,Ala. R2	6.10
Bartonville,Ill.(19) K4	5.95
Crawfordsville,Ind. M8	6.30
Donora,Pa. A7	5.95
Duluth A7	5.95
Johnstown,Pa. B2	5.95
Joliet,Ill. A7	5.95
Kokomo,Ind. C16	6.05
Minnequa,Colo. C10	6.20
Pittsburg,Calif. C11	6.90
Portsmouth,O. P12	6.25
Rankin,Pa. A7	5.95
So.Chicago,Ill. R2	6.10
SparrowsPoint,Md. B2	6.05
Sterling,Ill.(1) N15	5.65
Worcester,Mass. A7	6.25

NAILS, Cut (100 lb keg) To dealers (33)

Conshohocken,Pa. A3	$7.35
Wheeling,W.Va. W10	7.15

NAILS & STAPLES, Stock To dealers & mfrs. (7)

	Col.
AlabamaCity,Ala. R2	118
Aliquippa,Pa.(13) J6	118
Atlanta A11	121
Bartonville,Ill.(19) K4	118
Chicago,Ill. W13	130
Cleveland A9	125
Crawfordsville,Ind. M8	122
Donora,Pa. A7	118
Duluth A7	118
Fairfield,Ala. T2	118
Galveston,Tex. D7	126
Houston,Tex. S5	126
Johnstown,Pa. B2	118
Joliet,Ill. A7	118
KansasCity,Mo. S5	130
Kokomo,Ind. C16	120
Minnequa,Colo. C10	123
Monessen,Pa. P7	124
Pittsburgh,Calif. C11	137
Portsmouth,O. P12	124
Rankin,Pa. A7	118
So.Chicago,Ill. R2	118
SparrowsPoint,Md. B2	120
Sterling,Ill.(1) N15	118
Torrance,Calif. C11	138
Worcester,Mass. A7	124

STANDARD TRACK SPIKES

Ind.Harbor,Ind. I-2, Y1	6.15
KansasCity,Mo. S5	6.40
Lebanon,Pa. B2	6.15
Minnequa,Colo. C10	6.15
Pittsburgh J5	6.15
Seattle B3	6.65
So.Chicago,Ill. R2	6.15
Struthers,O. Y1	6.15
Youngstown R2	6.15

TRACK BOLTS (20) Treated

KansasCity,Mo. S5	9.85
Lebanon,Pa.(32) B2	9.85
Minnequa,Colo. C10	9.85
Pittsburgh O3, P14	9.85
Seattle B3	10.10

TIE PLATES

Fairfield,Ala. T2	4.50
Gary,Ind. U5	4.50
Ind.Harbor,Ind. I-2	4.50
Lackawanna,N.Y. B2	4.50
Minnequa,Colo. C10	4.50
Pittsburg,Calif. C11	4.65
Seattle B3	4.65
Steelton,Pa. B2	4.50
Torrance,Calif. C11	4.65

JOINT BARS

Bessemer,Pa. U5	4.70
Fairfield,Ala. T2	4.70
Ind.Harbor,Ind. I-2	4.70
Joliet,Ill. U5	4.70
Lackawanna,N.Y. B2	4.70
Minnequa,Colo. C10	4.70
Steelton,Pa. B2	4.70

AXLES

Ind.Harbor,Ind. S18	5.60
Johnstown,Pa. B2	5.60

RAILS	Std. No. 1	Std. No. 2	Std. All No. 2	TeeRails 60 lb Under
Bessemer,Pa. U5	3.60	3.50	3.55	4.00
Ensley,Ala. T2	3.60	3.50	...	4.00
Fairfield,Ala. T2	...	...	...	4.00
Gary,Ind. U5	3.60	3.50	3.55	...
Huntington,W.Va. W7	...	...	...	5.00
Ind.Harbor,Ind. I-2	3.60	3.50	3.55	...
Johnstown,Pa. B2	...	...	...(16)	4.00
Lackawanna B2	3.60	3.50	...	4.00
Minnequa,Colo. C10	3.60	3.50	...	4.50
Steelton,Pa. B2	3.60	3.50	...	...
Williamsport,Pa. S19	...	...	...	4.75

Key to Producers

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M9 Midvale Co.
M12 Moltrup Steel Products
M13 Monarch Steel Co.
M14 McInnes Steel Co.

N2 National Supply Co.
N3 National Tube Co.
N5 Nelsen Steel & Wire Co.
N6 NewEng.HighCarb.Wire
N8 Newman-Crosby Steel
N12 Niles Rolling Mill Co.
N14 Nrthwst. Steel Roll.Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.

O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke&Chem.
P7 Pittsburgh Steel Co.
P9 Pittsburgh Tube Co.
P11 Pollak Steel Co.
P12 Portsmouth Division, Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts.Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.

R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 RelianceDiv.,EatonMfg.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S5 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S9 Sloss-Sheffield.S.&I. Co.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
T2 Tenn. Coal, Iron & R.R.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div. Am. Rad. & Stan. San.

U1 Ulster Iron Works
U4 Universal Cyclops Steel
U5 United States Steel Co.

V2 Vanadium Alloys Steel
V3 Vulcan Crucible Steel Co.

W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Corp.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div. International Harvester
W15 Woodward Iron Co.
W16 Worth Steel Co.
W18 Wyckoff Steel Co.
Y1 Youngstown Sheet&Tube

TOOL STEELS

Grade	Cents per lb	Grade	Cents per lb
Reg. Carbon	23.00	13.5W,4Cr,3V	140.00
Extra Carbon	27.00	18W,4Cr,2V,9Co	217.50
Spec. Carbon	32.50	18W,4Cr,2V,7Co	217.50
Oil Hardening	35.00	18.25W,4.25Cr,1V,4.75Co	185.50
Cr Hot Wrk	35.00	20.25W,4.25Cr,1.6V,12.25Co	323.00
Hi-Carbon-Cr	63.50	1.5W,4Cr,1V,8.5Mo	78.50
18W,4Cr,1V	123.50	6.4W,4.5Cr,1.9V,5Mo	87.00
18W,4Cr,2V	138.00	6W,4Cr,3V,6Mo	109.50

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, H4, J3, L3, M14, S8, U4, V2, V3.

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant. (4) Reinforcing.
(5) Philadelphia del.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pittsburgh base.
(12) Worcester, Mass. base.
(13) Add 0.50c for 17 Ga. & heavier.
(14) Also wide flange beams.
(15) ¼" and thinner.
(16) 40 lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pittsburgh base.
(20) Deduct 0.25c for untreated.
(21) New Haven, Conn. base.
(22) Del. San Fran. Bay area.
(23) 28 Ga. 36" wide.
(24) Deduct 0.20c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing, to fabricators (elec. furn. billet, 5.40c); to consumers, 6.15c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Subject to 10% increase.
(30) Sheared; add 0.35c for universal mill.
(31) Not annealed.
(32) Rd. edge or square edge.
(33) To jobbers, deduct 20 cents.
(34) 7.25c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 gage & lighter; 60" & narrower.
(38) 16 gage & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.

STANDARD PIPE, T. & C.

BUTTWELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Black A	Black B	Black C	Galvanized D	Galvanized E	Galvanized F
⅛	5.5c	0.24	34.0	32.0	29.0	1.5	+0.5	+3.5
¼	6.0	0.42	28.5	26.5	23.5	+1.0	+3.0	+6.0
⅜	6.0	0.57	23.5	21.5	18.5	+7.0	+8.0	+12.0
½	8.5	0.85	36.0	34.0	35.0	14.0	12.0	13.0
¾	11.5	1.13	39.0	37.0	38.0	18.0	16.0	17.0
1	17.0	1.68	41.5	39.5	40.5	21.5	19.5	20.5
1¼	23.0	2.28	42.0	44.0	41.0	22.0	24.0	21.0
1½	27.5	2.78	42.5	41.5	41.5	23.0	21.5	22.0
2	37	3.68	43.0	41.0	42.0	23.5	21.5	22.5
2½	58.5	5.82	43.5	41.5	42.5	24.0	22.0	23.0
3	76.5	7.62	43.5	41.5	42.5	24.0	22.0	23.0

Column A: Etna, Pa. N2; Butler, Pa. ⅛-⅜", F6; Benwood, W. Va., 3½ points lower on ⅛", 1½ points lower on ¼", and 2 points lower on ⅜", W10; Sharon, Pa. M6, 1 point higher on ⅛", 2 points lower on ¼" and ⅜"; following make ½" and larger: Lorain, O., N3; Youngstown R2 and 36¾% on 3½" and 4"; Youngstown Y1; Aliquippa, Pa. J6. Fontana, Calif. K1 quotes 11½ points lower on ½" and larger continuous weld and 24% on 3½" and 4". Columns B & E: Sparrows Point, Md. B2.

Columns C & F: Indiana Harbor, Ind., ½" through 3", Y1; Alton, Ill. (Gary base) L1.

Column D: Butler, Pa. F6, ⅛-⅜"; Benwood, W. Va. W10, except plus 3½% on ⅛", plus 2½% on ¼", plus 9% on ⅜"; Sharon, Pa. M6, plus 0.5 on ⅛", 1 point lower on ⅜", ¾", 1½ points lower on 1" and 1¼", 2 points lower on 1½", 2", 2½" and 3". Following quote only on ½" and larger: Lorain, O. N3; Youngstown R2, and 16½% on 3½" and 4"; Youngstown Y1; Aliquippa, Pa. J5 quotes 1 point lower on ¾", 2 points lower on 1", 4½ points lower on 1¼", 2 points lower on 1½" and 2", 1½ points lower on 2½" and 3", Etna, Pa. N2 and 18½% on 3½" and 4".

SEAMLESS AND ELECTRIC WELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Seamless Black A	Seamless Galv. B	Elec. Weld Black C	Elec. Weld Galv. D
2	37.0c	3.68	29.5	9.5	29.5	9.5
2½	58.5	5.82	32.5	12.5	32.5	12.5
3	76.5	7.62	32.5	12.5	32.5	12.5
3½	92.0	9.20	34.5	14.5	34.5	14.5
4	$1.09	10.89	34.5	14.5	34.5	14.5
5	1.48	14.81	37.0	17.0	37.0	17.0
6	1.92	19.18	37.0	17.0	37.0	17.0

Column A: Aliquippa J5; Ambridge N2; Lorain N3; Youngstown Y1.

Column B: Aliquippa J5 quotes 1½ pts lower on 2", 1 pt lower on 2½-6 in.; Lorain, N3; Youngstown Y1.

Columns C & D: Youngstown R2.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
1	13	13.45	16.47	15.36	15.36
1¼	13	16.09	19.71	15.61	18.19
1½	13	17.27	21.15	17.25	20.30
1¾	13	19.29	23.62	19.62	23.09
2	13	21.62	26.48	21.99	25.86
2¼	13	24.35	29.82	24.50	28.84
2¼	12	26.92	32.97	26.98	31.76
2½	12	29.65	36.32	29.57	34.76
2¾	12	32.11	39.33	31.33	36.84
3	12	34.00	41.64	32.89	38.70

CLAD STEELS

(Cents per pound)

Cladding Stainless	Plates Carbon Base 10%	Plates Carbon Base 20%	Strip Cold-Rolled Carbon Base Both Sides 10%	Strip Cold-Rolled Carbon Base Both Sides	Sheets Carbon Base 10%	Sheets Carbon Base 20%	Cu Base Both Sides
302	....	....	....	....	19.75	27.50	77.00
304	25.00	28.00–29.50	....	....	20.75–24.50	27.50	77.00
309	30.50	35.00	....	....	....	....	....
310	36.50	41.00	....	....	....	....	144.00
316	29.50	31.50–34.00	....	....	26.00	36.50	....
317	34.50	39.00	....	....	....	....	....
318	33.50	38.00	....	....	....	....	....
321	26.50	31.00	....	....	23.00	33.00	111.00
347	27.50	30.50–32.00	....	....	24.00	33.50	130.00
405	21.25	27.75	....	....	....	....	....
410	20.75	27.25	....	....	....	....	....
Nickel	33.25	44.25	41.00	54.00	....	....	....
Inconel	41.00	53.50	....	....	....	....	165.00
Monel	34.75	45.75	....	....	....	....	....
Copper*	....	....	23.70†	29.65‡	....	....	....

* Deoxidized. † 20.20c for hot-rolled. ‡ 26.40c for hot-rolled. Production points for carbon base products: Stainless plates, steel, Conshohocken, Pa. A3 and New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. W16, Coatesville, Pa. L7 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; nickel, monel, copper-clad strip, Carnegie, Pa., S18. Production point for copper-base sheets is Carnegie, Pa. A13.

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

6 in. and shorter:

½-in. & smaller diam.	15
⅝-in. & ¾-in.	18.5
⅞-in. and larger	17.5
Longer than 6 in.:	
All diams.	14
Lag bolts, all diams.:	
6 in. and shorter	23
over 6 in. long	21
Ribbed Necked Carriage	18.5
Blank	34
Plow	34
Step, Elevator, Tap, and Sleigh Shoe	21
Tire bolts	12
Boiler & Fitting-Up bolts	31

NUTS

H.P. & C.P. Square:	Reg. Hvy.
½-in. & smaller	15 15
⅝-in. & ¾-in.	12 6.5
⅞-in.-1½-in.	9 1
1⅝ in. & larger	7.5 1
H.P. Hex.:	
½-in. & smaller	26 22
⅝-in. & ¾-in.	16.5 6.5
⅞-in.-1½-in.	12 2
1⅝ in. & larger	8.5 2
C.P. Hex.	
½-in. & smaller	26 22
⅝-in. & ¾-in.	23 17.5
⅞-in. & 1½-in.	19.5 12
1⅝-in. & larger	12 6.5

SEMIFINISHED NUTS

American Standard

(Per cent off list for less than case or keg quantities)

	Reg.	Hvy.
½-in. & smaller	35	28.5
⅝-in. & ¾-in.	29.5	22
⅞-in.-1½-in.	24	15
1⅝-in. & larger	13	8.5
	Light	
½-in. & smaller	35	
⅝-in. to ¾-in.	28.5	
⅞-in. to 1½-in.	26	

STEEL STOVE BOLTS

(F.o.b. plant; per cent off list in packages)

Plain finish .....48 & 10

Plated finishes....31 & 10

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6 in. or shorter:

½-in. & smaller	42
⅝-in. through 1 in.	34
Longer than 6 in.:	
⅝-in. & smaller	26
⅞-in. through 1 in.	4

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam. x 6 in. and shorter	38
1 in. and smaller diam. x over 6 in.	26

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller	35
¼-in. diam. & larger	16
N.F. thread, all diams.	10

RIVETS

F.o.b. midwestern plants

Structural ½-in., larger 7.85c

⅞-in. under ..... 36 off

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers ..List to list-plus-50c.

ELECTRODES

(Threaded, with nipples, unboxed, f.o.b. plant)

GRAPHITE

Diam. Inches	Length Inches	Cents per lb
17.18.20	60,72	17.85
8.to.16	48,60,72	17.85
7	48,60	19.57
6	48,60	20.95
4.5⅛	40	21.50
3	40	22.61
2½	24,30	23.15
2	24,30	25.36

CARBON

40	100,110	8.03
35	100,110	8.03
30	84,110	8.03
24	72 to 104	8.03
17 to 20	34,90	8.03
14	60,72	8.57
10.12	60	8.84

STAINLESS STEEL

Type	Sheets	C.R. Strip	Bars Wire Structurals
301	41.00	34.00	31.25
302	41.00	36.50	31.25
303	43.00	40.00	33.75
304	43.00	38.50	32.75
309	55.50	54.50	44.25
316	56.50	58.50	48.75
321	49.00	48.00	36.75
347	53.50	52.00	41.25
410	36.50	30.50	25.75
416	37.00	37.00	26.25
420	44.00	47.00	31.25
430	39.00	31.00	26.25
501	27.50	26.00	14.25
502	28.50	27.00	15.25

Baltimore, Types 301 through 347 sheet, except 309 E2.

Brackenridge, Pa., sheets A4.

Bridgeville, Pa., bars, wire, sheets & strip U4.

Butler, Pa., sheets and strip except Types 303, 309, 416, 420, 501 & 502 A10.

Carnegie, Pa., sheets and strip except Types 303, 416, 501 & 502, S18.

Cleveland, strip A7.

Detroit, strip, except Types 309, 321, 416, 420, 501 and 502 M1.

Dunkirk,N.Y., bars, wire A4.

Duquesne, Pa., bars U5.

Gary, Ind., sheets except Type 416 U5.

Harrison, N. J., strip C18.

McKeesport, Pa., bars, sheets except Type 416 U5.

McKeesport, Pa., bars & wire except Types 301, 309, 501 & 502; strip Types 410 & 430 only F2.

Middletown, O., sheets and strip except Types 303, 416, 420, 501 and 502 A10.

Midland, sheets & strip C18.

Munhall, Pa., bars U5.

Pittsburgh, sheets C18.

Reading, Pa., bars and strip, except 55.50c for Type 309 strip and 44.75c for Type 309 bars, C4.

Sharon, Pa., strip, except Types 303, 309, 316, 416, 501 and 502 S3.

So. Chicago, Ill., bars & structurals U5.

Syracuse, N. Y., bars, wire & structurals C18.

Titusville, Pa., bars, U4.

Wallingford, Conn., strip, except 309, W2 quotes 0.25 cents higher.

Washington, Pa., bars, sheets & strip, except Type 309 sheets 56.00c and bars 44.75c, J3.

Washington, Pa., Types 301 through 347 sheets & strip as listed except 303 & 309; 316 sheets 61.50c, strip 63.00c, W4.

Watervliet, N. Y., structurals & bars A4.

Waukegan, bars & wire A7.

West Leechburg, Pa., strip, A4.

Youngstown, strip, except Types 303, 309, 316, 416, 501 and 502 C8.

COAL CHEMICALS

Spot, cents per gallon, ovens

Pure benzol 30.00-35.00

Toluol, one deg...26.00-33.00

Industrial xylol ..25.00-33.50

Per ton bulk, ovens

Sulphate of ammonia.$32-$45

Cents per pound, ovens

Phenol, 40 (carlots, non-returnable drums) ..17.25

Do., less than carlots..18.00

Do., tank cars 15.50

FLUORSPAR

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content, 70%, $43; 60%, $40.

Imported, net ton, duty paid, metallurgical grade, $33-$35.

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted.)

	Cents
Sponge iron	
98+% Fe, carlots	16.00
Swedish, c.l.f. New York, in bags	17.00-18.50
Electrolytic Iron:	
Annealed, 99.5% Fe	42.50
Unannealed, 99 + % Fe	36.50
Unannealed, 99 + % Fe(minus 325 mesh)	58.50
Powder Flakes	48.50
Carbonyl Iron:	
97.9-99.8%, size 5 to 10 microns	.83.00-148.00
Aluminum:	
Carlots, freight allowed	29.50
Atomized, 500 lb drums, freight allowed	33.50
Brass, 10-ton lots	30.00-33.25
Bronze, 10-ton lots	.....51.25-60.00
Phosphor-Copper, 10 tons	50.00
Copper:	
Electrolytic	43.25
Reduced	33.75-37.00
Lead	25.50
Manganese:	
Minus 100-mesh	57.00
Minus 35 mesh	52.00
Minus 200 mesh	62.00
Nickel unannealed	83.00
Nickel-Silver, 10-ton lots	44.00
Silicon	38.50
Solder (plus cost of metal)	8.50
Stainless Steel, 302	$3.00
Tin	$1.935
Zinc, 10-ton lots	23.00-30.50
Tungsten:	Dollars
99%, minus 80 to 200 mesh, freight allowed:	
1000 lb and over	4.00
Less than 1000 lb	4.15
98.8% minus 65 mesh, freight allowed:	
1000 lb. and over	4.15
less than 1000 lb.	4.25
Molybdenum:	
99%, minus 80 to 200 mesh, over 500 lb	2.85
200 to 500 lb	3.10
less than 200 lb	3.25
Chromium, electrolytic 99% Cr min.	3.50

METALLURGICAL COKE

Price per net ton

BEEHIVE OVENS

Connellsvil,fur. .$14.50-15.00

Connellsvil,fdry. 17.00-18.00

New River, foundry....19.50

Wise county, foundry..15.95

Wise county, furnace..15.20

OVEN FOUNDRY COKE

Kearney, N. J., ovens.$22.75

Everett, Mass., ovens

New England, del. 24.80

Chicago, ovens 21.00

Chicago, del. 22.45

Detroit, del. 24.91

Terre Haute, ovens..22.50

Milwaukee, ovens 23.75

Indianapolis, ovens....22.75

Chicago, del. 26.62

Cincinnati, del. 25.67

Detroit, del. 26.65

Ironton, O., ovens 21.50

Cincinnati, del. 24.06

Painesville, O., ovens..24.00

Buffalo, del. 26.12

Cleveland, del. 25.72

Erie, Pa., ovens 23.50

Birmingham, ovens ..20.30

Birmingham, del. ..21.69

Philadelphia, ovens ..22.70

Neville Island,Pa.,ovens 23.00

Swedeland, Pa., ovens.22.00

St. Louis, ovens 24.25

St. Louis, del. 25.38

Portsmouth, O., ovens.21.50

Cincinnati, del. 24.06

Detroit, ovens 24.00

Detroit, del. *25.00

Buffalo, del. 26.69

Flint, del. 26.44

Pontiac, del. 25.39

Saginaw, del. 26.75

Includes representative switching charge of: *, $1.00; †, $1.45, one-track charge being $1.20, two tracks $1.40, and three or more tracks $1.50. ‡ Or within $4.15 freight zone from works.

WAREHOUSE STEEL PRODUCTS

(Prices, cents per pound, for delivery within switching limits, subject to extras)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.	H.R. Alloy 4140§		Carbon	Floor
New York (city)	6.27	7.29	8.44	6.59	...	6.42	7.29	9.25	6.40	6.58	8.04
New York(c'try)	5.97	6.99	8.14	6.29	...	6.12	6.99	8.95	6.10	6.28	7.74
Boston (city)	6.40	7.20	8.49	6.35	...	6.25	7.04	9.25	6.40	6.98	7.88
Boston (c'try)	6.20	7.00	8.29	6.15	...	6.05	6.84	9.05	6.20	6.78	7.68
Phila. (city)	7.15	7.95	8.25	6.35	...	6.30	7.11	8.60	6.15	6.30	7.40
Phila. (c'try)	6.90	6.80	8.00	6.10	...	6.05	6.86	8.65	5.90	6.05	7.15
Balt. (city)	5.80	7.04	8.27	6.24	...	6.24	7.09	...	6.34	6.00	7.64
Balt. (c'try)	5.60	6.84	8.07	6.04	...	6.04	6.89	...	6.14	5.80	7.44
Norfolk, Va.	6.50	...	...	6.70	...	6.55	7.70	...	6.60	6.50	8.00
Richmond, Va.	5.90	...	8.10	6.10	...	6.10	6.90	...	6.30	6.06	7.80
Wash. (w'hse)	6.02	7.26	8.49	6.46	...	6.46	7.26	...	6.56	6.22	7.86
Buffalo (del.)	5.80	6.60	8.29	6.06	...	5.80	6.65	10.65††§	6.00	6.26	7.55
Buffalo (w'hse)	5.60	6.40	8.09	5.86	...	5.60	6.45	10.45††§	5.80	6.06	7.35
Pitts. (w'hse)	5.60	6.40*	7.75	5.65-5.95	6.90	5.55	6.40	10.10††	5.70	5.75	7.00
Detroit (w'hse)	5.45-5.78	6.53-6.80	7.99	5.94-5.95	7.75	5.84	6.56	8.91	6.09	6.19-6.35	7.28
Cleveland (del.)	5.80	6.60	8.30	5.89	7.10	5.77	6.60-6.70	8.91	10.02	6.12	7.32
Cleve. (w'hse)	5.60	6.40	8.10	5.69	6.90	5.57	6.40-6.50	8.71	5.82	5.92	7.12
Cincin. (city)	6.02	6.59	7.34	5.95	...	5.95	6.51	...	6.24	6.34	7.50
Chicago (city)	5.80	6.60	7.95	5.75	...	5.75	6.50	10.30	5.90	6.00	7.20
Chicago (w'hse)	5.60	6.40	7.75	5.55	...	5.55	6.30	10.10	5.70	5.80	7.00
Milwaukee (city)	5.94	6.74	8.09	5.89	...	5.89	6.74	10.44	6.04	6.14	7.34
Milwau. (c'try)	5.74	6.54	7.89	5.69	...	5.69	6.54	10.24	5.84	5.94	7.14
St. Louis (del.)	5.68	6.48	7.28	5.63	...	5.63	6.28	10.08††§	5.78	5.93	7.13
St. L. (w'hse)	5.48	6.28	7.08	5.43	...	5.43	6.08	9.88††§	5.58	5.73	6.93
Kans. City(city)	6.40	7.20	8.40	6.35	...	6.35	7.20	...	6.50	6.60	7.80
KansCity(w'hse)	6.20	7.00	8.20	6.15	...	6.15	7.00	...	6.30	6.40	7.60
Omaha, Nebr.	6.13‡	...	8.33	6.13	...	6.18	6.98	...	6.18	6.38	7.83
Birm'hm (city)	5.75	6.55	6.90[2]	5.70	...	5.70	7.53	...	5.85	6.10	8.25
Birm'hm (w'hse)	5.60	6.40	6.75[2]	5.55	...	5.55	7.53	...	5.70	5.95	8.23
Los Ang. (city)	6.55	8.10	9.05[2]	6.60	8.90	6.55	7.75	...	6.55	6.60	9.20
L. A. (w'hse)	6.35	7.90	8.85[2]	6.40	8.70	6.35	7.55	...	6.35	6.40	8.70
San Francisco	6.65	7.80[4]	8.90[2]	6.60	...	6.45	8.20	...	6.45	6.50	8.60
Seattle-Tacoma	7.05	8.60[2]	9.20[2]	7.30	...	6.75	9.10	11.15	6.65	6.75	8.80

* Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded; ‡ includes extra for 10 gage; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted: Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; [2]—500 to 1499 lb; [4]—450 to 1499 lb; [5]—3500 lb and over; [6]—1000 to 1999 lb.

REFRACTORIES

FIRE CLAY BRICK

Super Duty: St. Louis, Vandalia, Farber, Mexico, Mo., Olive Hill, Hayward, Ashland, Ky., Clearfield, Curwensville, Pa., Ottawa, Ill., $116.60. Hard-fired, St. Louis, Vandalia, Mo., Olive Hill, Ky., $156.20.

High-Heat Duty: Salina, Pa. $99.60 Woodbridge, N. J., St. Louis, Farber, Vandalia, Mexico, Mo., West Decatur, Orviston, Clearfield, Beach Creek, Curwensville, Lumber, Lockhaven, Pa., Olive Hill, Hitchins, Haldeman, Ashland, Ky., Troup, Athens, Tex., Stevens Pottery, Ga., Bessemer, Ala., Portsmouth, Oak Hill, O., Ottawa, Ill., $94.60.

Intermediate-Heat Duty: St. Louis, Farber, Vandalia, Mo., West Decatur, Orviston, Beach Creek, Curwensville, Lumber, Lockhaven, St. Marys, Clearfield, Pa., Olive Hill, Hitchins, Haldeman, Ashland, Hayward, Ky., Athens, Troup, Tex., Stevens Pottery, Ga., Portsmouth, O., Ottawa, Ill., $88; Bessemer, Ala., $79.20.

Low-Heat Duty: Oak Hill, or Portsmouth, O., Clearfield, Orviston, Pa., $79.20; Parral, O., $78.50; St. Marys, Pa., $76; Ottawa, Ill., $70.

LADLE BRICK

Dry Press: Chester, New Cumberland, W. Va., Freeport, Merill Station, Clearfield, Pa., Irondale, Wellsville, O. $66.

Wire Cut: Chester, Wellsville, O., $64.

MALLEABLE BUNG BRICK

St. Louis, Vandalia, Farber, Mo., Olive Hill, Ky., $105.60; Beach Creek, Pa., $94.60; Ottawa, Ill., $90.

SILICA BRICK

Mt. Union, Claysburg, or Sproul, Pa., Portsmouth, O., Ensley, Ala., $94.60; Hays, Pa., $100.10; Joliet, Rockdale, Ill., E. Chicago, Ind., $104.50; Lehi, Utah, Los Angeles, $111.10.

Eastern Silica Coke Oven Shapes (net ton): Claysburg, Mt. Union, Sproul, Pa., Birmingham, $92.40.

Illinois Silica Coke Oven Shapes (net ton): Joliet or Rockdale, Ill., E. Chicago, Ind., Hays, Pa., $93.50.

BASIC BRICK

Per net ton, Baltimore or Chester, Pa. Burned chrome brick, $73-$78; chemical-bonded chrome brick, $77-$82; magnesite brick, $99-$104; chemical-bonded magnesite, $88-$93.

MAGNESITE

Per net ton, Chewelah, Wash. Domestic deadburned, ⅝" grains; bulk, $36.30; single paper bags, $41.80.

DOLOMITE

Per net ton. Domestic, burned bulk; Bonne Terre, Mo., $12.15; Martin, Millersville, Nario, Clay Center, Woodville, Gibsonburg, Bettsville, O.; Billmeyer, Plymouth Meeting, Blue Bell, Williams, Pa., Millville, W. Va., $13.

ORES

LAKE SUPERIOR IRON ORE

Gross ton, 51½% (natural), lower lake ports.

After adjustment for analysis, prices will be increased or decreased as the case may be for increases or decreases after Dec. 2, 1950 in applicable lake vessel rates, upper lake rail freights, dock handling charges and taxes thereon.

Old range bessemer	$8.70
Old range nonbessemer	8.55
Mesabi bessemer	8.45
Mesabi nonbessemer	8.30
High phosphorus	8.30

EASTERN LOCAL ORE

Cents per unit, del. E. Pa.

Foundry and basic 56-62% concentrates contract	17.00

FOREIGN ORE

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	17.00
Long-term contract	15.00
North African hematites	15.75
Brazilian iron ore, 68-69%	18.00

TUNGSTEN ORE

Net ton unit, duty paid

Foreign wolframite and scheelite, per net ton unit	$38-$39
Domestic scheelite, del.	nominal

MANGANESE ORE

Indian manganese, 46-48%, nearby, 92.00-96.00c per long ton unit, c.i.f. U. S. ports, duty for buyer's account; shipments against old contracts for 48% ore are being received from some sources at 79.8-81.8c.

CHROME ORE

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

	Indian and African	
48%	2.8:1	$32.50
48%	3:1	35.00-36.00
48%	no ratio	26.00
	South African Transvaal	
44%	no ratio	$24.00-25.00
45%	no ratio	26.00
48%	no ratio	$31.00-32.00
50%	no ratio	28.00-28.50
	Brazilian	
44%	2.5:1 lump	$32.00
	Rhodesian	
45%	no ratio	$20.00-21.00
48%	no ratio	26.00
48%	3:1 lump	35.00-36.00
	Domestic—rail nearest seller	
48%	3:1	$39.00

MOLYBDENUM

Sulphide concentrates per lb. molybdenum content, mines	$0.90

FERROALLOYS

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si). Carlot per gross ton, $75, Palmerton, Pa.; $75, Pittsburgh and Chicago; (16% to 19% Mn) $1 per ton lower.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.) Carload, lump, bulk $185 per gross ton of alloy, c.l. packed, $197; gross ton lots, packed, $212; less gross ton lots, packed, $229; f.o.b. Alloy, W. Va., Niagara Falls, N. Y., Welland, Ont., or Ashtabula, O. Base price: $187, Johnstown, Pa.; $185, Sheridan, Pa.; $188, Etna, Pa.; $190, Chattanooga, Tenn. Shipment from Pacific Coast warehouses by one seller add $33 to above prices, f.o.b. Los Angeles, Oakland, Portland, Oreg. Shipment from Chicago warehouse, ton lots $227; less gross ton lots, $244 f.o.b. Chicago. Add or subtract $2.30 for each 1% or fraction thereof, of contained manganese over 82% and under 78%, respectively.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max. 0.07% C, 25.75c per lb of contained Mn, carload packed 26.5c, ton lot 27.6c, less ton 28.8c. Delivered. Deduct 0.5c for max. 0.15% C grade from above prices, 1c for max. 0.30% C, 1.5c for max. 0.50% C, and 4.5c for max. 75% C—max. 7% Si. **Special Grade:** (Mn 90% min., C 0.07% max., P 0.06% max.). Add 0.5c to above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max.). Carload, lump, bulk 19.15c per lb of contained Mn, carload packed 19.9c, ton lot 21.0c, less ton 22.2c. Delivered. Spot, add 0.25c.

Manganese Metal, 2" x D (Mn 96% min., Fe 2% max., Si 1% max., C 0.2% max.): Carload lump bulk, 34c per lb of metal; packed, 34.75c; ton lot 36.25c; less ton lot 38.25c. Delivered. Spot, add 2c.

Manganese Electrolytic: 250 lb to 1999 lb, 32c; 2000 to 39,999 lb, 30c; 40,000 lb or more, 28c. Premium for hydrogen-removed metal 1.5c per pound, f.o.b. cars Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-68%). Contract, lump bulk, 1.50% C grade, 18.26% Si 9.90c per lb of alloy, carload packed, 10.65c, ton lot 11.55c, less ton 12.55c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2 from above prices. For 3% C grade, Si 12-14.5%, deduct 0.5c from above prices. Spot, add 0.25c.

NOTE: Prices on chromium, tungsten, silicon, titanium, vanadium, calcium, zirconium, boron and "other" ferroalloys appeared on pages 140 and 142, Feb. 19, 1951, issue.

Metal Restrictions Change Rapidly

Consumers must maintain flexibility in production plans in view of uncertainty regarding supplies to be available for consumer goods in future months

INDUSTRIES using metals must maintain flexibility in their production plans to cope with the rapid changes which will continue to be made in availability of supplies.

Governmental agencies responsible for channeling the flow of raw materials into plants making goods for defense and mobilization, as well as essential civilian needs, are still in the organizational stage. Their regulations and recommendations so far have been more or less preliminary during the period required to shift the nation's economy into high defense gear and pending more accurate balancing of essential needs with available supplies.

Several public utilities were advised earlier this year, for instance, that their copper wire supply would drop to a mere trickle by fourth quarter and they should make plans to use more aluminum wire. They are now advised the supply of aluminum wire will be more stringent than that of copper and to again make a change in fourth quarter plans.

National Production Authority has amended its copper order M-12 to permit users to make a more gradual adjustment to meet end-use restrictions and help prevent dislocations in employment. You may use copper held in inventory after Mar. 1, subject to percentage limitations of the order.

Another new provision requires you to certify that the metal will be used in compliance with the order before delivery is made.

Due to scarcity of galvanized water pipe, you are permitted to use copper tubing for hot and cold water systems in homes.

NPA also added a list of items (List B) in which you may not use copper after Apr. 1. Items included in this list are various nonfunctional uses of copper in commercial and industrial refrigeration and air-conditioning machinery and equipment, certain items of builders' hardware and building materials, etc.

Use of copper in making permitted goods in April will be cut 25 per cent below the average rate in the first six months of 1950. The cutback was 15 per cent in January and February and 20 per cent in March. You can expect further curtailment later in the year as defense work mounts.

Copies of amendment No. 2 to copper order M-12 may be obtained from American Brass Co., Waterbury, Conn. The company was distributing these copies within 48 hours after release of the text in Washington.

Aluminum Restrictions Tightened

The cutback on aluminum is more severe. Use of aluminum will be cut 35 per cent over the base period on Apr. 1 compared with 25 per cent in March. These restrictions are necessary to meet defense needs, despite a sharp rise in production. The present projected plant construction and reactivation program is designed to increase by mid-1952 United States production potential by 525,000 tons, or 68 per cent.

Zinc Shortage May Ease

Progressively deeper cuts in use of aluminum and steel in second and third quarters will have an easing effect on zinc as these reductions are coming in industries (automotive and household appliances) which are major consumers of zinc. Availability of other metals has a direct influence on demand for zinc. With some producers of zinc, automotive and household appliances are rated No. 1 and No. 2 in zinc consumption, largely in die castings. The automatic shift drive takes a substantial tonnage of zinc die castings in combination with aluminum. From these major industries, steel and aluminum may be diverted to other defense requirements, but this is not assured in the case of zinc. Application of steel and aluminum in defense work may not require an accompanying use of zinc. Up to now, specifications for major war equipment do not include the extensive use of zinc die castings.

Production reached 550 tons of ore daily at the end of January and is currently running about 650 tons a day at the new Shullsburg, Wis., zinc-lead mine of Calumet & Hecla Consolidated Copper Co. Production is expected to increase to about 1200 tons a day by mid-year. This output will help relieve the shortage of zinc which may reach 100,000 tons in 1951.

Expect Cut in Platinum Use

Users of platinum and platinum alloys can expect an order soon limiting consumption of these metals in some nonessential items and a complete ban on their use in other items. This action is necessary to insure adequate supplies for expanding defense needs, especially in making chemicals and electronic equipment.

Government Aids Metal Miners

Defense Production Administration has allocated $10 million of the funds authorized under the Defense Production Act of 1950 to the Department of the Interior for use in encouraging exploration for strategic and critical metals. The funds will be used to assist prospectors and mine operators in searching for and blocking out new reserves of ore.

If you are encountering difficulty in obtaining machinery and equipment for essential repairs and maintenance of your mines, mills and smelters engaged in production of critical metals and minerals contact the Defense Minerals Administration, Washington. This agency is acting as claimant agency for the industry. If necessary, the distribution of metal and nonferrous metal ores and minerals may be controlled to protect producers and fabricators from curtailing output of critical items.

Dow Plans Magnesium Mill

Dow Chemical Co., Midland, Mich., plans to set up a continuous magnesium rolling mill in Madison, Ill., the first such facility anywhere in the world. All magnesium rolling heretofore has been done on hand mills. The company plans to spend about $26 million for specially designed equipment to handle the job. Production may be started in a year. As the first step in the project, Dow purchased for $1.5 million a large war surplus plant formerly operated by Standard Steel Spring Co.

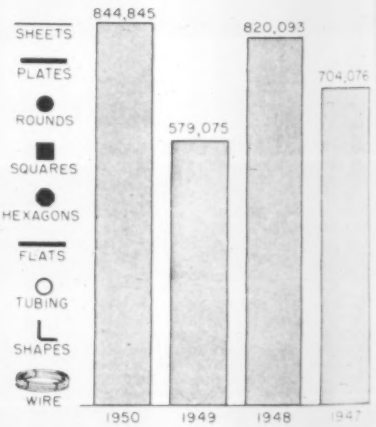
Aluminum Shipments Gain

More aluminum wrought products are being produced than at any time since World War II days, although invoices of shipments to your plant may be declining. December shipments of aluminum wrought products, on an average working-day basis, were 7 per cent above November and 73 per cent over the December, 1949, figure. Total shipments came to 844,845 net tons in 1950 compared with 579,075 tons in 1949. Of last year's shipments, 571,092 tons were plate, sheet and strip; 134,890 tons, rolled structural shapes, rod, bar and wire; 127,615 tons, extruded shapes, tube blooms and tubing; 11,248 tons, powder, flake and paste.

Shipments of wrought products totaled 12,810,000 pounds in 1950 compared with 8,264,000 pounds in 1949.

Florence Stove Co., Gardner, Mass., has a $2.5 million subcontract for ailerons and wing flaps from Republic Aviation Corp., Farmingdale, N. Y. Bulk of metal requirements is aluminum.

Aluminum Wrought Products
(Producers' Shipments, Net Tons)



NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 24.50c, Conn. Valley; Lake 24.62½c, delivered.

Brass Ingots: 85-5-5-5 (No. 115) 29.00c; 88-10-2 (No. 215) 43.25c; 80-10-10 (No. 305) 35.00c; No. 1 yellow (No. 405) 25.00c.

Zinc: Prime western 17.50c; brass special 17.75c; intermediate 18.00c. East St. Louis; high grade 18.85c, delivered.

Lead: Common 16.80c; chemical 16.90c; corroding 16.90c, St. Louis.

Primary Aluminum: 99% plus, ingots 19.00c; pigs 18.00c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 30.00-30.50c; No. 12 foundry alloy (No. 2 grade) 29.50-30.25c; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 32.00c; grade 2, 30.00-30.25c; grade 3, 29.00-29.50c; grade 4, 28.50-29.00c. Prices include freight at c.l. rate up to 75 cents per 100 lb.

Magnesium: Commercially pure (99.8%+) standard ingots, 10,000 lb and over 24.50c, f.o.b. Freeport, Tex.

Tin: Grade A, prompt, Feb. 183.00c.

Antimony: American 99-99.8% and over but not meeting specifications below 42.00c; 99.8% and over (arsenic 0.05% max.; other impurities 0.1% max.) 42.50; f.o.b. Laredo, Tex., for bulk shipments.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 50.50c; 25-lb pigs, 53.15c; "XX" nickel shot, 54.15c; "F" nickel shot or ingots, for addition to cast iron, 51.00c. Prices include import duty.

Mercury: Open market, spot, large lots, New York, $216-$220 per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, $1.56 per lb of alloy, f.o.b., Reading, Pa.

Cadmium: "Regular" straight or flat forms, $2.55 del.; special or patented shapes $2.80.

Cobalt: 97.99%, $2.10 per lb for 500 lb (kegs); $2.12 per lb for 100 lb (case); $2.17 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York 90.16c per oz.

Platinum: $90-$93 per ounce from refineries.

Palladium: $24 per troy ounce.

Iridium: $200 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Base prices, cents per pound, f.o.b. mill)

Sheet: Copper 41.03; yellow brass 37.84; commercial bronze, 95%, 40.99; 90%, 40.55; red brass, 85%, 39.56; 80%, 39.15; best quality, 39.15; nickel silver, 18%, 51.91-52.36; phosphor-bronze grade A, 5%, 60.20-62.82.

Rod: Copper, hot-rolled 36.88; cold-drawn 38.13; yellow brass free cutting, 32.23; commercial bronze, 95%, 40.68; 90%, 40.24; red brass 85%, 39.28; 80%, 38.84.

Seamless Tubing: Copper 41.07; yellow brass 40.85; commercial bronze, 90%, 43.21; red brass, 85%, 42.56.

Wire: Yellow brass 38.13; commercial bronze, 95%, 41.28; 90%, 40.84; red brass, 85%, 39.88; 80%, 39.44; best quality brass, 39.44.

Copper Wire: Bare, soft, f.o.b. eastern mills, c.l. 28.67-30.295; l.c.l. 29.17-30.92; 100,000 lb lots 28.545-30.295; weatherproof, f.o.b. eastern mills, c.l. 29.60, l.c.l. 30.10; 100,000 lb lots 29.35; magnet, del., 15,000 lb or more 34.50, l.c.l. 35.25.

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders.)

Sheets and Circles: 28 and 38 mill finish c.l.

Thickness Range, Inches	Widths or Diameters, In., Incl.	Flat Sheet Base	Coiled Sheet Base	Coiled Sheet Circle Base
0.249-0.136	12-48	30.1	...	...
0.135-0.096	12-48	30.6	...	...
0.095-0.077	12-48	31.2	29.1	33.2
0.076-0.061	12-48	31.8	29.3	33.4
0.060-0.048	12-48	32.1	29.5	33.7
0.047-0.038	12-48	32.5	29.8	34.0
0.037-0.030	12-48	32.9	30.2	34.6
0.029-0.024	12-48	33.4	30.5	35.0
0.023-0.019	12-36	34.0	31.1	35.7
0.018-0.017	12-36	34.7	31.7	36.6
0.016-0.015	12-36	35.5	32.4	37.6
0.014	12-24	36.5	33.3	38.9
0.013-0.012	12-24	37.4	34.0	39.7
0.011	12-24	38.4	35.0	41.2
0.010-0.0095	12-24	39.4	36.1	42.7
0.009-0.0085	12-24	40.6	37.2	44.1
0.008-0.0075	12-24	41.9	38.4	46.1
0.007	12-18	43.3	39.7	48.2
0.006	12-18	44.8	41.0	52.8

Lengths 72 to 180 inches. Maximum diameter, 26 inches.

Screw Machine Stock: 5000 lb and over

Diam. (in.) or distance across flats	Round R317-T4		Hexagonal	
	178-T4	R317-T4	178-T4	
0.125	52.0	...	...	
0.156-0.188	44.0	...	...	
0.219-0.313	41.5	...	...	
0.375	40.0	46.0	48.0	
0.406	40.0	...	...	
0.438	40.0	46.0	48.0	
0.469	40.0	...	...	
0.500	40.0	46.0	48.0	
0.531	40.0	...	...	
0.563	40.0	...	45.0	
0.594	40.0	...	...	
0.625	40.0	43.5	45.0	
0.688	40.0	...	45.0	
0.750-1.000	39.0	41.0	42.5	
1.063	39.0	...	41.0	
1.125-1.500	37.5	39.5	41.0	
1.563	37.0	...	...	
1.625	36.5	...	39.5	
1.688-2.000	36.5	...	...	

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland-Pittsburgh) Sheets: Full rolls, 140 sq ft or more $22.00 per cwt, add 50c cwt to sq ft to 140 sq ft. Pipe: Full coils $22.00 per cwt. Traps and bends: List prices plus 60%.

ZINC

Sheets, 24.50c, f.o.b. mill 36,000 lb and over. Ribbon zinc in coils, 23.00c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 23.50-24.50c; over 12-in., 23.50-24.50c.

"A" NICKEL

(Base prices f.o.b. mill)

Sheets, cold-rolled, 71.50c. Strip, cold-rolled 77.50c. Rods and shapes, 67.50c. Plates, 69.50c. Seamless tubes, 100.50c.

MONEL

(Base prices, f.o.b. mill)

Sheets, cold-rolled 57.00c. Strip, cold-rolled 60.00c. Rods and shapes, 55.00c. Plates, 56.00c. Seamless tubes, 90.00c. Shot and blocks, 50.00c.

MAGNESIUM

Extruded Rounds, 12 in. long, 1.31 in. in diameter, less than 25 lb, 55.00-62.00c; 25 to 99 lb, 45.00-52.00c; 100 lb to 5000 lb, 41.00c.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $10; forgings, $6; hot-rolled and forged bars, $6.

Plating Materials

Chromic Acid: 99.9% flake, f.o.b. Philadelphia, carloads, 27.00c; 5 tons and over 27.50c; 1 to 5 tons, 28.00c; less than 1 ton 28.50c.

Copper Anodes: Base 2000 to 5000 lb, f.o.b. shipping point, freight allowed: Flat untrimmed 37.69c; oval 37.19c. Cast 37.375c, delivered in eastern territory.

Copper Cyanide: 70-71% Cu, 100-lb drums, 1000 lb 60.5c, under 1000 lb 62.5c, f.o.b. Niagara Falls, N. Y.

Sodium Cyanide: 96-98%, ½-oz ball, in 200 lb drums, 1 to 900 lb, 19.00c; 1000 to 19,900 lb, 18.00c, f.o.b. Niagara Falls, N. Y. Packaged in 100 lb drums add ½-cent.

Copper Carbonate: 53-56% metallic Cu, 50 lb bags, up to 200 lb, 29.25c; over 200 lb 28.25c, f.o.b. Cleveland.

Nickel Anodes: Rolled oval, carbonized, carloads, 68.50c; 10,000 to 30,000 lb, 69.50c; 5000 to 10,000 lb, 70.50c; 500 to 3000 lb, 71.50c; 100 to 500 lb, 73.50c; under 100 lb, 76.50c, f.o.b. Cleveland.

Nickel Chloride: 100-lb kegs, 35.00c; 100-lb bbl, 33.00c up to 10,000 lb, 32.50c; over 10,000 lb, f.o.b. Cleveland, freight allowed on barrels of 4 or more kegs.

Tin Anodes: Bar, 1000 lb and over, nom.; 500 to 999 lb, nom.; 200 to 499 lb, nom.; less than 200 lb, nom.; ball, 1000 lb and over, nom.; 500 to 999 lb, nom.; 200 to 499 lb, nom.; less than 200 lb, nom.; f.o.b. Sewaren, N. J.

Sodium Stannate: 25 lb cans only, less than 100 lb, to consumers nom.; 100 or 300 lb drums only, 100 to 500 lb, nom.; 600 to 1900 lb, nom.; 2000 to 9900 lb, nom.; f.o.b. Sewaren, N. J. Freight not exceeding St. Louis rate allowed.

Zinc Cyanide: 100 lb drums, less than 10 drums 47.7c, 10 or more drums 45.7c, f.o.b. Niagara Falls, N. Y.

Stannous Sulphate: 100 lb kegs or 100 lb bbl, less than 2000 lb nom.; more than 2000 lb, nom., f.o.b. Carteret, N. J.

Stannous Chloride (Anhydrous): In 100 lb bbl, nom.; 100 lb kegs nom., f.o.b. Carteret, N. J.

Scrap Metals

BRASS MILL ALLOWANCES

Prices in cents per pound for less than 20,000 lb, f.o.b. shipping point.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	23.00	23.00	22.25
Yellow Brass	20.125	19.875	18.75
Commercial Bronze			
95%	21.875	21.625	21.125
90%	21.75	21.50	21.00
Red brass			
85%	21.50	21.25	20.75
80%	21.375	21.125	20.625
Muntz metal	19.00	18.75	18.25
Nickel silver, 10%	22.25	22.00	11.125
Phos. bronze, A	24.00	23.75	22.75

BRASS INGOT MAKERS' BUYING PRICES

(Cents per pound, delivered eastern refineries, carload lots)

No. 1 copper 25.00; No. 2 copper 22.00; light copper 20.00; composition red brass 22.50-23.00; radiators 17.75-18.00; heavy yellow brass 17.75-18.00.

REFINERS' BUYING PRICES

(Cents per pound, delivered refinery, carload lots)

No. 1 copper 21.50*; No. 2 copper 20.00*; light copper 19.00*; refinery brass (60% copper) per dry copper content 19.50.

* Nominal.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Copper and brass: Heavy copper and wire, No. 1 21.50; No. 2 20.00; light copper 19.00; No. 1 composition red brass 19.00-19.50; No. 1 composition turnings 18.50-19.00; mixed brass turnings 13.50-14.00; new brass clippings 17.50-18.00; No. 1 brass rod turnings 16.00-16.50; light brass 13.50-14.00; clean heavy yellow brass 15.25-15.75; new brass rod ends 16.50-17.00; auto radiators 15.50-16.00; cocks and faucets 17.50-18.00; brass pipe 18.50-19.00.

Lead: Heavy 15.00-15.25; battery plates 8.75-9.00; linotype and stereotype 15.50-16.00; electrotype 15.00-15.25; mixed babbitt 12.25-12.50.

Zinc: Old zinc 11.00-11.25; new die cast scrap 10.75-11.00; old die cast scrap 8.00-8.25.

Tin: No. 1 pewter 80.00-85.00; block tin pipe 125.00; No. 1 babbitt 75.00-80.00.

Aluminum: Clippings 28 19.00-19.50; old sheets 15.50-16.00; crankcase 15.50-16.00; borings and turnings 12.00-12.50.

DAILY PRICE RECORD

1951	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
Feb. 13-21	24.50	16.80	17.50	183.00	19.00	42.00	50.50	90.16
Feb. 1-10	24.50	16.80	17.50	182.50	19.00	42.00	50.50	90.16
Jan. Avg.	24.50	16.80	17.50	171.798	19.00	42.00	50.50	90.16
Jan. 29-31	24.50	16.80	17.50	188.00	19.00	42.00	50.50	90.16
Jan. 26-27	24.50	16.80	17.50	182.00	19.00	42.00	50.50	90.16
Jan. 25	24.50	16.80	17.50	183.00	19.00	42.00	50.50	90.16
Jan. 24	24.50	16.80	17.50	180.00	19.00	42.00	50.50	90.16
Jan. 23	24.50	16.80	17.50	178.00	19.00	42.00	50.50	90.16
Jan. 22	24.50	16.80	17.50	176.00	19.00	42.00	50.50	90.16
Jan. 19-20	24.50	16.80	17.50	175.50	19.00	32.00	50.50	90.16
Jan. 18	24.50	16.80	17.50	175.75	19.00	32.00	50.50	90.16
Jan. 17	24.50	16.80	17.50	176.00	19.00	32.00	50.50	90.16
Jan. 16	24.50	16.80	17.50	175.00	19.00	32.00	50.50	90.16

NOTE: Copper, Electrolytic, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk, f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9%, base sizes at refinery unpacked; Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

CEILING PRICES, IRON AND STEEL SCRAP

Prices as set forth in Office of Price Stabilization ceiling price regulation No. 5, effective Feb. 7, 1951.

STEELMAKING SCRAP COMPOSITE

Feb. 22	$41.00
Feb. 15	41.00
Jan. 1951	46.33
Feb. 1950	27.52
Feb. 1946	19.17

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

Basing point ceiling prices per gross ton from which maximum shipping prices are computed on scrap of dealer and industrial origin; and from which ceiling on-line and ceiling delivered prices are computed on scrap of railroad origin.

No. 1 Heavy Melting Steel (Grade 1)

Basing Point	Dealer, Industrial	Railroad
Alabama City, Ala.	$39.00	$41.00
Ashland, Ky.	42.00	44.00
Atlanta, Ga.	39.00	41.00
Bethlehem, Pa.	42.00	44.00
Birmingham, Ala.	39.00	41.00
Brackenridge, Pa.	44.00	46.00
Buffalo, N. Y.	43.00	45.00
Butler, Pa.	44.00	46.00
Canton, O.	44.00	46.00
Chicago, Ill.	42.50	44.50
Cincinnati, O.	43.00	45.00
Claymont, Del.	42.50	44.50
Cleveland, O.	43.00	45.00
Coatesville, Pa.	42.50	44.50
Conshohocken, Pa.	42.50	44.50
Detroit, Mich.	40.00	42.00
Duluth, Minn.	40.00	42.00
Harrisburg, Pa.	42.50	44.50
Houston, Tex.	37.00	39.00
Johnstown, Pa.	44.00	46.00
Kansas City, Mo.	39.50	41.50
Kokomo, Ind.	42.00	44.00
Los Angeles	35.00	37.00
Middletown, O.	43.00	45.00
Midland, Pa.	44.00	46.00
Minnequa, Colo.	38.00	40.00
Monessen, Pa.	44.00	46.00
Phoenixville, Pa.	42.50	44.50
Pittsburg, Calif.	35.00	37.00
Pittsburgh, Pa.	44.00	46.00
Portland, Oreg.	35.00	37.00
Portsmouth, O.	42.00	44.00
St. Louis, Mo.	41.00	43.00
San Francisco	35.00	37.00
Seattle, Wash.	35.00	37.00
Sharon, Pa.	44.00	46.00
Sparrows Point, Md.	42.00	44.00
Steubenville, O.	44.00	46.00
Warren, O.	44.00	46.00
Weirton, W. Va.	44.00	46.00
Youngstown, O.	44.00	46.00

Differentials from Base

Differentials per gross ton above or below the price of Grade 1 (No. 1 heavy melting steel) for other grades of dealer and industrial scrap.

Open-hearth and Blast Furnace Grades

2. No. 2 Heavy Melting	—$2.00
3. No. 1 Busheling	Base
4. No. 1 Bundles	Base
5. No. 2 Bundles	— 3.00
6. Machine Shop Turnings	—10.00
7. Mixed Borings & Short Turnings	— 6.00
8. Shoveling Turnings	— 6.00
9. No. 2 Busheling	— 4.00
10. Cast Iron Borings	— 6.00

Electric Furnace and Foundry Grades

11. Billet, Bloom & Forge Crops	+ 7.50
12. Bar Crops & Plate Scrap	+ 5.00
13. Cast Steel	+ 5.00
14. Punchings & Plate Scrap	+ 2.50
15. Electric Furnace Bundles	+ 2.00
Cut Structurals & Plate:	
16. 3 feet and under	+ 3.00
17. 2 feet and under	+ 5.00
18. 1 foot and under	+ 6.00
19. Briquetted Cast Iron Borings	Base
20. Foundry Steel, 2 feet and under	+ 2.00
21. Foundry Steel, 1 foot and under	+ 4.00
22. Springs and Crankshafts	+ 1.00
23. Alloy Free Turnings	— 3.00
24. Heavy Turnings	— 1.00

Special Grades

25. Briquetted Turnings	Base
26. No. 1 Chemical Borings	— 3.00
27. No. 2 Chemical Borings	— 4.00
28. Wrought Iron	+10.00
29. Shafting	+10.00

Restrictions on Use

(1) Prices for Grades 11, 23 and 24 may be charged only when shipped to a consumer directly from an industrial producer of such grades, otherwise ceiling prices shall not exceed prices established for the corresponding grades of basic open-hearth and blast furnace scrap.

(2) Prices established for Grades 26 and 27 may be charged only when such grades are sold for use for chemical or annealing purposes; otherwise ceiling prices for such grades shall not exceed the price established for Grade 10.

(3) Prices established for Grade 28 may be charged only when sold to a producer of wrought iron; otherwise ceiling price for such grade shall not exceed the ceiling price established for the corresponding grade of basic open-hearth.

Special Pricing Provisions

(1) Sellers of Grades 26 and 27 may make an extra charge of $1.50 per ton for loading in box cars, or 75 cents per ton for covering gondola cars with a weather-resistant covering.

(2) Ceiling price of pit scrap, ladle scrap, salamander scrap, skulls, skimmings or scrap recovered from slag dumps and prepared to charging box size, shall be computed by deducting from the price of No. 1 heavy melting steel of dealer and industrial origin, the following amounts: Where iron content is 85% and over, $4; 75% and over, $6; less than 75%, $10.

(3) Ceiling price of any inferior grade of scrap not listed shall not exceed the price of No. 1 heavy melting steel less $15.

Differentials from Base

Differentials per gross ton above or below the price of Grade 1 (No. 1 railroad heavy melting steel) for other grades of railroad steel scrap.

2. No. 2 Heavy Melting Steel	—$2.00
3. No. 2 Steel Wheels	Base
4. Hollow Bored Axles	Base
5. No. 1 Busheling	— 3.50
6. No. 1 Turnings	— 3.00
7. No. 2 Turnings, Drillings & Borings	—12.00
8. No. 2 Cast Steel	— 6.00
9. Uncut Frogs, switches	Base
10. Flues, Tubes & Pipes	— 8.00
11. Structural, Wrought Iron and/or steel, uncut	— 6.00
12. Destroyed Steel Cars	— 8.00
13. No. 1 Sheet Scrap	— 9.50
14. Scrap Rails, Random Lengths	+ 2.00
15. Rerolling Rails	+ 7.00
Cut Rails:	
16. 3 feet and under	+ 5.00
17. 2 feet and under	+ 6.00
18. 18 inches and under	+ 8.00
19. Cast Steel, No. 1	+ 3.00
20. Uncut Tires	+ 2.00
21. Cut Tires	+ 5.00
22. Uncut Bolsters & Side Frames	Base
23. Cut Bolsters & Side Frames	+ 3.00
24. Angle & Splice Bars	+ 5.00
25. Solid Steel Axles	+12.00
26. Steel Wheels, No. 3 oversize	Base
27. Steel Wheels, No. 3	+ 5.00
28. Spring Steel	+ 5.00
29. Couplers & Knuckles	+ 5.00
30. Wrought Iron	+ 8.00

Restrictions on Use

(1) Price established for Grade 15 may be charged only when purchased and sold for rerolling uses; otherwise, ceiling price for such grade shall not exceed ceiling price established for Grade 14.

(2) Price established for Grade 30 may be charged only when sold to a producer of wrought iron; otherwise, ceiling price for such grade shall not exceed ceiling price established for No. 1 heavy melting steel.

CAST IRON SCRAP

Ceiling price per gross ton for any of the following grades of cast iron scrap shall be the price shown in the following table, f.o.b. shipping point.

1. Cast Iron, No. 1 (Cupola Cast)	$49.00
2. Cast Iron, No. 2 (Charging Box Cast)	47.00
3. Cast Iron, No. 3 (Heavy Breakable Cast)	45.00
4. Cast Iron, No. 4 (Burnt Cast)	41.00
5. Cast Iron Brake Shoes	41.00
6. Stove Plate	46.00
7. Clean Auto Cast	52.00
8. Unstripped Motor Blocks	43.00
9. Wheels, No. 1	47.00
10. Malleable	55.00
11. Drop Broken Machinery Cast	52.00

Restrictions on Use

(1) Ceiling shipping point or on-line price which a basic open-hearth consumer may pay for No. 1 cast iron, No. 1 wheels, clean auto cast or malleable shall be the ceiling price established for No. 3 cast iron.

(2) Ceiling shipping point or on-line price which any foundry consumer other than a malleable iron producer may pay for Grade 10 shall be the ceiling price established for No. 1 cast iron.

Preparation Charges

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of dealer or industrial origin which is allocated by the National Production Authority to a consumer, shall be as follows:

(1) For preparing into Grades No. 1, No. 2 or No. 3, $8.
(2) For hydraulically compressing Grade No. 4, $6 per ton; Grade No. 5, $8.
(3) For crushing Grade No. 6, $3.
(4) For preparing into Grade No. 25, $6.
(5) For preparing into Grade No. 19, $6.
(6) For preparing into Grade No. 12, Grade No. 13, Grade No. 14, or Grade No. 18, $10.
(7) For preparing into Grade No. 17 or Grade No. 21, $10.
(8) For preparing into Grade No. 16 or Grade No. 20, $10.
(9) For hydraulically compressing Grade No. 15, $8.
(10) For preparing into Grade No. 28, $10.

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of railroad origin shall be as follows:

(1) For preparing into Grade No. 1 and Grade No. 2, $8.
(2) For hydraulically compressing Grade No. 13, $6.
(3) For preparing into Grade No. 16, $4.
(4) For preparing into Grade No. 17, $5.
(5) For preparing into Grade No. 18, $7.
(6) For preparing into Grade No. 21, $4.
(7) For preparing into Grade No. 23, $4.

Ceiling fees per gross ton which may be charged for intransit preparation of cast iron shall be limited to the following:

(1) For preparing Grade No. 8 into Grade No. 7, $9.
(2) For preparing Grade No. 3 into Grade No. 1, $4.

Whenever scrap has arrived at its point of delivery and the consumer engages a dealer to prepare such scrap, no fee may be charged for such services unless the consumer obtains prior written approval from OPS.

No preparation charge other than the charges set forth above may be made for the preparation of any grade of iron or steel scrap unless the consumer has secured prior written approval of such charges from OPS.

Commissions

No commissions shall be payable except by a consumer to a broker for brokerage services rendered. Where scrap is allocated by NPA other than from a government agency, the seller may designate a broker. Where scrap is allocated by NPA from a governmental agency, the consumer may designate a broker. In the event a broker purchases scrap for sale to a consumer, such consumer may pay such broker a commission not exceeding $1 a ton.

Unprepared Scrap

The term "unprepared scrap" shall not include such demolition projects as bridges, box cars or automobiles which must be so priced that the prepared scrap will be delivered to the consumer within the established ceiling delivered prices.

For unprepared steel scrap other than materials suitable for hydraulic compression, the ceiling basing point prices shall be $8 per gross ton beneath the established ceiling price of the prepared base grades, No. 1 heavy melting or No. 1 railroad heavy melting steel.

For unprepared material which when compressed constitutes No. 1 bundles the ceiling basing point price shall be $6 per gross ton beneath the ceiling basing point price for No. 1 bundles; or when compressed constitutes No. 2 bundles the ceiling basing point price shall be $8 per ton beneath the ceiling basing point price for No. 2 bundles.

Any iron casting which cannot be broken with an ordinary drop into Grade No. 2 or Grade No. 1 may not be classified as Grade No. 3. Where such iron casting requiring blasting or other special preparation is sold to a consumer of scrap, the shipping point price for Grade No. 3 must be reduced by the amount of the additional charges required for preparation.

Premiums for Alloy Content

No premium may be charged for alloy content except: $1.25 per ton for each 0.25% of nickel where scrap contains not less than 1% and not over 5.25% nickel; $2 per ton for scrap containing not less than 0.15 per cent molybdenum and $3 for scrap containing not less than 0.65% molybdenum; for scrap containing not less than 10% manganese, $4 for scrap in sizes larger than 12 x 24 x 8 in., and $14 for scrap cut in that size or smaller (applicable only if scrap is sold for electric furnace use or on NPA allocation); $1 for scrap conforming to SAE 52100 when sold for electric furnace use only.

Switching Charges

Switching charges to be deducted from basing point prices of dealer, industrial and nonoperating railroad scrap, to determine ceiling shipping point prices for scrap originating in basing points are per gross ton:

Alabama City, Ala., 43c; Ashland, Ky., 47c; Atlanta, 51c.
Bethlehem, Pa., 52c; Birmingham, 50c; Brackenridge, Pa., 53c; Buffalo, 83c; Butler, Pa., 65c.
Canton, O., 51c; Chicago (including Gary, Ind.), $1.34c; Cincinnati (including Newport, Ky.), 65c; Claymont, Del. (including Chester, Pa.), 79c; Cleveland, 76c.
Coatesville, Pa., 50c; Conshohocken, Pa., 20c.
Detroit, 95c; Duluth, Minn., 50c.
Harrisburg, Pa., 51c; Houston, Tex., 57c.
Johnstown, Pa., 75c.
Kansas City, Mo., 78c; Kokomo, Ind., 51c..
Los Angeles (including Firestone switching district), 66c.
Middletown, O., 26c; Midland, Pa., 75c; Minnequa, Colo., 33c; Monessen, Pa., 51c.
Phoenixville, Pa., 51c; Pittsburg, Calif., 65c; Pittsburgh (including Bessemer, Homestead, Duquesne, Munhall), 99c; Portland, Oreg., 52c; Portsmouth, O., 51c.
St. Louis (including Granite City, E. St. Louis, Madison, Ill.), 51c; San Francisco (including So. San Francisco, Niles, Oakland), 66c; Seattle, 59c; Sharon, Pa., 75c; Sparrows Point, Md., 20c; Steubenville, O., 51c.
Warren, Pa., 75c; Weirton, W. Va., 70c.
Youngstown, 75c.

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Steel Bars . . .

Bar Prices, Page 121

Boston—If CMP becomes operative by July 1, considerable rated bar tonnage already booked and to be taken will be subject to rescheduling to fit new plan for distributing. Already booked beyond June on some rated bar volume, transfer to CMP should not be attended by too much confusion. Orders are in excess of the 25 per cent set-aside for cold-finished and also the rated hot-rolled limitation for carbon. Increase in defense acceptance for both carbon and alloy grades will permit movement of some tonnage forward, but at expense of allocations. Restrictions on use of steel by several major industries in the case of bars will hardly balance the increase in requirements for armament and other defense programs.

New York—While recent further expansion of minimum quotas for DO-rated orders was stipulated to go into effect in April, some bar sellers claim that word came too late to enable them to do much in revising their schedules for that month. To all practical intents and purposes, many producers can't put the change into effect before May. Some producers who had set aside more tonnage for DO-rated orders than the old quotas called for will be able to meet the new stipulation in April.

Philadelphia—Increase in DO-rated order quotas has made it possible for sellers of hot-rolled and cold-drawn bars to work in tonnage for as early as May, whereas previously a number were quoting nothing before third quarter. Shell steel requirements benefit particularly as the time has arrived when they are being stepped up sharply.

Pittsburgh—Bulk of bar tonnage moving from producers' plants continues on un-rated orders but the volume of defense and related requirements is mounting steadily. Beginning with the April rolling cycle set-aside for DO ratings on hot-rolled bars will be 15 per cent and on alloy bars 45 per cent of mill output. Cold-finished carbon bar set-asides will rise 10 points to 25 per cent, and alloy cold-finished 15 points to 40. These increases will necessitate further cutbacks in quotas of regular customers.

Cleveland—Pressure for bar tonnage is mounting with defense requirements expanding steadily. Some mills are entertaining DO orders into the summer months and indications are that with the increase in the percentage set-aside for rated orders additional bookings of this class will be worked into schedules before mid-year. This, of course, will be at the expense of civilian goods, such as automobiles and home appliances, steel supplies for which will be cut back Apr. 1 to 20 per cent below the average level in the first half of last year. This cutback may be upped to 30 per cent by third quarter. Tonnage released through these cutbacks will be immediately diverted to defense consumption so that no material easing in overall supply conditions is indicated in prospect. On regular commercial tonnage barmakers are booking on a month-to-month basis, books now being filled on this account throughout April.

Chicago—The May-June rolling cycle is the earliest opening a mill in this district has for not-rolled carbon bars for DO orders. For rail steel bars it is July. Shell steel orders so far are negligible but apparently a program is being developed since some rolling of this product will be undertaken in May. Local mills are experiencing considerable difficulty obtaining sufficient freight cars to move their products to customers, the situation being as bad as during the rail strike. Because of this trucking is being utilized to the maximum.

Sheets, Strip . . .

Sheet and Strip Prices, Page 121 & 122

Cleveland—Cutbacks in steel supplies for civilian goods, scheduled to become effective in April, will not materially ease the pressure on sheetmakers. Whatever tonnage is released will be quickly taken up by defense requirements. Some sheet mills have booked DO business into the summer months. Regular commercial bookings, however, do not extend beyond April. Customer quotas for that month are slightly smaller than in March, and expectations are commercial quotas for succeeding months will shrink in step with expanding defense needs. The increase in the DO set-aside tonnage to 17 per cent on hot-rolled sheets and 15 per cent on cold-rolled will not affect supply conditions significantly since most makers had been booking defense tonnage beyond the originally scheduled percentage set-asides.

Boston—Rated orders for cold-rolled strip exceed required product limitations by a substantial margin, accounting for 30 to 35 per cent of the backlog with some producers. Bulk of stainless is in this category and an increasing ratio of high carbon. Because of substitutions straight chromium grades are more extended. Backlogs of rated tonnage are increased by assignment of DOs to orders booked earlier without ratings.

Philadelphia—Of eight new allocation programs set up for May, sheet producers will be called upon to handle all of the tonnage for the largest, namely that for drums and pails, involving 66,000 tons of hot, cold-rolled and galvanized sheets. They will not be called upon to contribute much to the other programs, however. Cutbacks in household appliances may result in some temporary layoffs in this district. To date there have been few, if any, suspensions due to lack of steel.

Pittsburgh—Sheet shipments in this area are recovering from the traffic snarl resulting from the switchmen's strike. Finished steel was piled by the mills in large volume during the tieup. Currently shortage of cars is acute, preventing prompt movement of accumulated tonnage. Further, trucks for hauling steel are increasingly scarce here. Tightening of state road load regulations is causing so-called "gypsy" truckers to transfer their equipment to other areas where the authorities are less insistent on load limits. In this state 45,000 pounds is the limit.

Demand for the light, flat-rolled products shows no sign of relaxing and with increasing tonnage being diverted to defense and related requirements the pinch on civilian supplies tightens. Set-aside for DO-rated orders has been increased 5 points to 17 per cent on hot-rolled sheets and 3 points to 15 per cent on cold-rolled. Producers expect even greater set-asides will be ordered before summer.

Cincinnati—Civilian demand for sheets gives no indication of end-use cutbacks. Tonnage to meet this demand will shrink under impact of new priority regulations. Supply is getting progressively tighter, for domestic needs, as will be highlighted in quotas for April and May.

Chicago—Sheet and strip users holding DO orders report their situation eased through NPA upping of percentages which mills are obliged to supply. Some consumers with new DO business were able to get on future schedules and others already on books were able to get earlier shipping schedules. One local mill has no opening for DO hot-rolled sheet tonnage until January next year. First opening for cold-rolled sheets is July. Most other items stand in May. Meanwhile the new government allocations for new support programs spell bad news for civilian users of sheets and strip since the bite in May will be big.

St. Louis—Sheet production is being doled to customers on a monthly basis. Granite City Steel Co. last week allocated April output and will issue May quotas shortly after Mar. 1. Tonnage to non-rated consumers is tightened only moderately in general the mill being able to boost production enough to carry the increasing government load. The company is shifting some sheet capacity to plates.

Los Angeles—With sheets tighter than ever, buyers and sellers are raising the stakes. Gray market sellers are offering various flat-rolled products at 16 cents and 18 cents per pound and desperate sheet users use newspaper advertisements to locate premium priced tonnage.

Tin Plate . . .

Tin Plate Prices, Page 122

Pittsburgh—At least temporary loss of some tin can markets to other forms of containers is threatened as result of tin conservation measures being effected by government control authorities. Currently, paint manufacturers express concern over the NPA order banning use of tin in paint cans. They have asked for a six months' grace period in which to develop suitable substitute packaging, expressing fear that tinless cans made of plain black plate will not stand up against newly developed paints. Use of jars and paper containers is seen as a possible alternative.

San Francisco—Beginning Apr. 1, Pacific Can Co. will substitute black plate for the manufacture of cans for motor oil. The company reported the steel and canmaking industries have found that for certain commodities, chemically treated black plate may be substituted for tin coated plate. This plate would use an organic coating of domestic manufacture in place

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of tin. Tin would be used only on a thin strip where the side seam is soldered. The tin used on this type plate would be approximately 8 per cent of the tin formerly used in coating the entire plate.

Structural Shapes . . .

Structural Shape Prices, Page 121

Boston—Bridge inquiry, which has been slow for several months, is heavier. The Charlestown section of the single and double-deck elevated highway, Boston central artery, closes Mar. 20, taking about 7500 tons of structurals. Steel for piling will be furnished by the state from a 14,000-ton contract placed with Bethlehem Steel Co. Private engineering and construction work is light; bulk on boards is for power plant extensions and other closely-connected defense work, most of which will be given rated preference.

New York—Structural demand is spotty, various projects being held in abeyance pending clarification as to future prospects for steel. Practically all fabricators are booked months ahead and neither fabricators nor builders are able to appraise the situation that far off except where projects have been given definite approval by Washington. Approvals on some jobs on which there was question have been granted since the middle of the month, but there is not a sufficient amount to constitute any real pattern.

Philadelphia — Structural activity continues slack. While a few fair-sized orders have been placed, volume is down from several weeks ago and new inquiries are off. However, considerable industrial work is in the planning stage, along with public work which also will receive priority ratings. Consequently the lull may be only temporary.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 121

Boston—Concrete reinforcing bar allocations to fabricators and distributors have been reduced an average of 25 per cent. Tight supply situation is aggravated by the lag in deliveries; some tonnage has only recently been delivered on orders placed under November and December quotas. Rated orders for reinforcing steel are limited, with bridge and highway requirements lower.

Seattle—Rolling mills are at peak capacity with heavy backlogs which remain stationary. Demand for small tonnages is insistent. Several major projects involving reinforcing are up for early action. Operators expect to be booked for the year by July 1.

Plates . . .

Plate Prices, Page 121

Philadelphia—While allocation of 26,500 tons of miscellaneous steel for merchant ship construction needs has been programmed for May, plate producers were able to work in some directives for these needs for April even though specifications in certain cases arrived after expiration of the lead-time for that month. Also some tonnage was taken at the last minute for ship repairs. Defense requirements will make more important demands on plate sellers in May. In addition to an increase effective that month of 5 points in minimum quotas for DO-rated orders to 20 per cent, they will share in several new allocation programs scheduled to begin in May.

Boston—Revisions in April schedules are made necessary by late assignment of program and emergency rated tonnage. For civilian fabrication, volume of plates is shrinking with shop inventories more unbalanced. Tank and pressure vessel shops are buying bulk of heads required to conserve plate allocations rather than fabricate from circles in their own shops. Spun heads range to 16 weeks delivery and pressed to 20 weeks.

Pittsburgh — Platemakers anticipate a steady increase in tonnage demand for ship repairs and new ship construction. Approximately 9000 tons of steel products will be provided monthly April through June for repair and conversion of vessels under supplement 4 to order M just issued by the National Production Authority. It is expected needs after June will be covered by Controlled Materials Plan distribution. Beginning in May the plate set-aside for DO-rated orders will rise to 20 per cent of mill output. Indications are that as the pressure for plates mounts some continuous sheet rolling capacity will be diverted to production of light plates.

Los Angeles—Plate quotas to regular customers are sharply reduced. Allotment of one fabricator whose

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plate needs of 20 tons monthly were previously satisfied by one mill, has been reduced by that producer to 20 tons per quarter.

Tubular Goods . . .

Tubular Goods Prices, Page 124

Boston—Although some steel pipe producers are in May on rated defense orders, volume in tubing is heavier with set-aside limitation nearly double to 60 per cent for alloy mechanical tubing; carbon grade rated limit is 15 per cent, an increase from 10 per cent. Merchant pipe allocations to distributors, on monthly basis, are somewhat lower due to March carryovers, but a deeper cut is indicated for May.

Wire . . .

Wire Prices, Page 123

New York—Allocations to non-rated wire consumers are shrinking endangering operating schedules. Upholstery spring wire supplies with some users are short. Innerspring mattress manufacturers have reduced output 20 to 25 per cent. Spring producers are getting about 70 per cent of required volume for full production. Restrictions on use of tin and copper exert some influence on placement of specialties. Coming restrictions on use of steel in automotive, appliance and other industries may ease pressure for some products without bettering rod supply due to heavier demand for other types of wire in defense.

Boston—Further easement in demand by the automotive industry is developing, valve spring wire included. Volume of rated orders is heavier, notably in high carbon and specialties. Some tonnage booked earlier under allocation is being given ratings, affecting April schedules to some degree and potentially more so in May. Because of the wide range of products under wire classification, some are much tighter than others, but all are more or less regulated by limited rod supply.

San Francisco—Lead time on wire and barbed wire is reported extending between three and four months. Industrial wire cloth demand is ahead of production as defense industry work currently absorbs about 10 per cent of output.

Pig Iron . . .

Pig Iron Prices, Page 120

Boston—Basic iron is relatively in shorter supply than foundry grade and consumers are barely maintaining permitted inventory in some cases. New York state iron is supplemented by foreign tonnage, cost of the latter being substantially over that of domestic, delivered mill. Some foreign iron was bought during the last half of 1950 at a price advantage which has since disappeared.

New York—Pig iron consumers have light inventories, some operating on a hand-to-mouth basis. The situation is particularly tight since more foundries are stepping up schedules to six days a week.

Buffalo—Obtaining ample coke supplies is becoming another problem for merchant iron consumers. Coke suppliers report available output is being allocated on a quota basis with demand exceeding supplies. Meanwhile, urgent demand for merchant iron continues. Additional government work is reported with stock available for civilian items being pared correspondingly at present.

Philadelphia—Shipment of about 8000 tons of Brazilian iron is being unloaded here. Last week 500 tons of Chilean iron arrived at Baltimore with another shipment from that country enroute. Much foreign iron is sought. However, delivery promises are extended, and unless consumers have tonnage coming in against old contracts they are not able to get much early relief. Stringency in domestic iron is so pronounced many believe government allocation is not far off.

Cleveland—Since imposition by the National Production Authority of a 30-day limit on inventories merchant iron sellers report pressure for shipments has eased somewhat. However, demand continues strong with the furnaces distributing available tonnage as equitably as possible. All blast furnaces in this immediate district are on but production has not yet fully recovered from the shutdowns occasioned by the recent switchmen's strike. The Toledo stack has been down for repairs several weeks and will be out through March. This has thrown added burden on other merchant sellers. American Steel & Wire Co. is advising its pig

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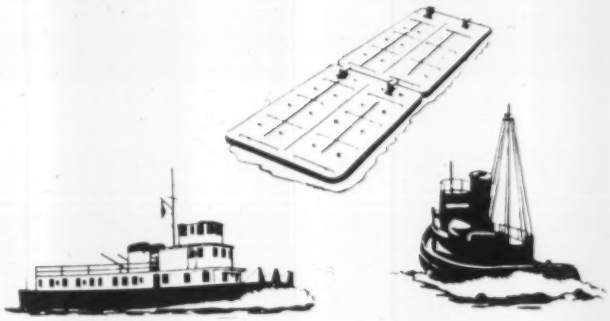

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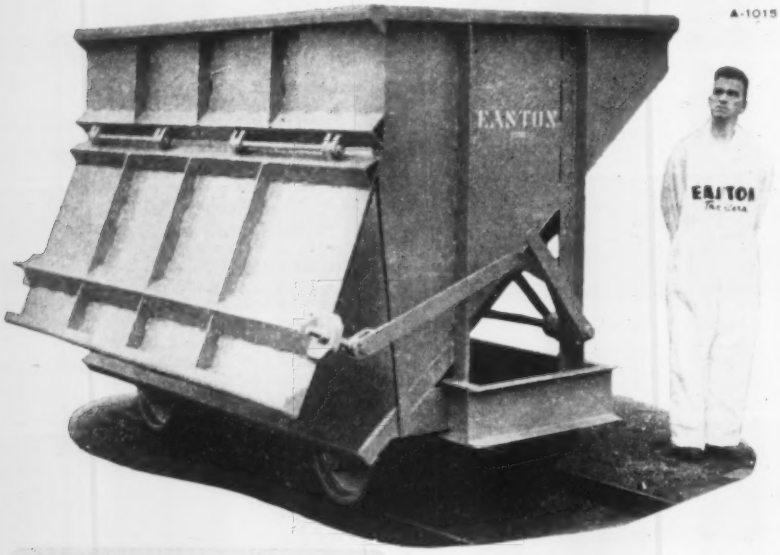

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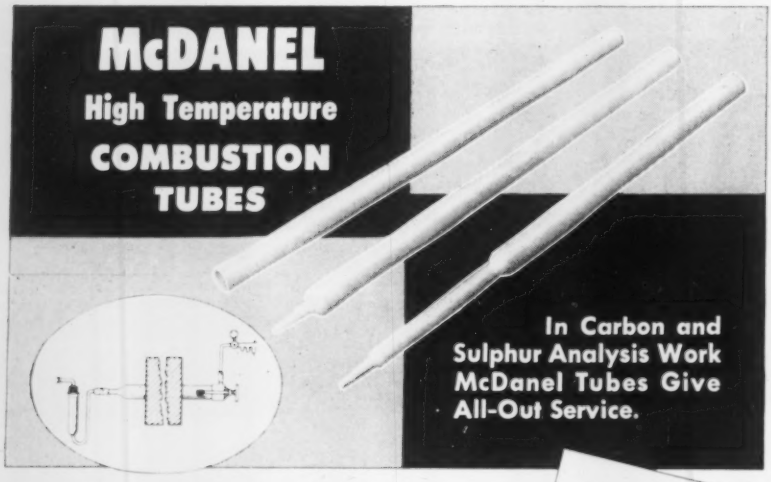

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iron customers months in advance of contemplated blowing out of one of its stacks here for relining next September. By then this stack will have produced about 3 million tons of iron since it was last completely relined in 1942.

Pittsburgh—Merchant pig iron sellers are doing everything possible to spread out available tonnage among customers. As a result no shutdowns for lack of iron are reported but inventories are so limited foundries are reluctant to increase production schedules. Many of them could do so were they assured adequate and steady flow of raw materials. This is a heavy equipment production point, and the expansion in defense activities is being reflected in increasing volume of orders for such facilities. Production of iron is being pushed to the limit but traffic difficulties stemming from the recent rail strike continue to hamper shipments somewhat. Blast furnace No. 2 at the Clairton Works, U.S. Steel Co., has been restored to the active list. It was down for repairs since Jan. 7.

Cincinnati — A strike of molders closed 26 foundries in this area—Cincinnati, Covington, Ky., Hamilton, Middletown and Dayton. This will relieve none of the pressure for pig iron but shutdowns may enable Southern furnaces to catch up with shipments which have been lagging.

Chicago—The log jam created by the recent strike of railroad switchmen is breaking up but iron suppliers still are experiencing trouble in getting cars to ship pig to consumers. Time will improve this situation although a car shortage exists under normal conditions. Small foundries now and then are forced to suspend production for a day or two but the condition is not general. Iron supply is not equal to demand and cast scrap is not available in quantity to fully provide the makeup. Opening of the Brandon lock at Joliet on Feb. 16 again makes possible barge shipment of foreign iron into this area from New Orleans.

St. Louis—Small foundries are rejoicing in the slight relief afforded by the scrap price ceilings. Pig iron scarcities had forced them increasingly to use scrap.

San Francisco — Some producers of steel in this area are "scouring the world" for pig iron. They are bringing it in from India, Europe and South America to augment domestic supplies. The situation is termed as "very rough" and even the shipments from foreign nations are not easy to get.

Seattle—Foundry operations are higher than normal for this season. Cast iron scrap is available in sufficient tonnages for current operations. The industry is relying on foreign pig iron, which is not openly quoted, all purchases being subject to confirmation as to price and delivery. Parcels from South Africa cannot be handled because of lack of ship service and full cargo shipments are practically out as freight rates are rising rapidly and vessels unavailable for charter. The same conditions apply to European pig which is being consumed in larger tonnages at the source and therefore is restricted for export.

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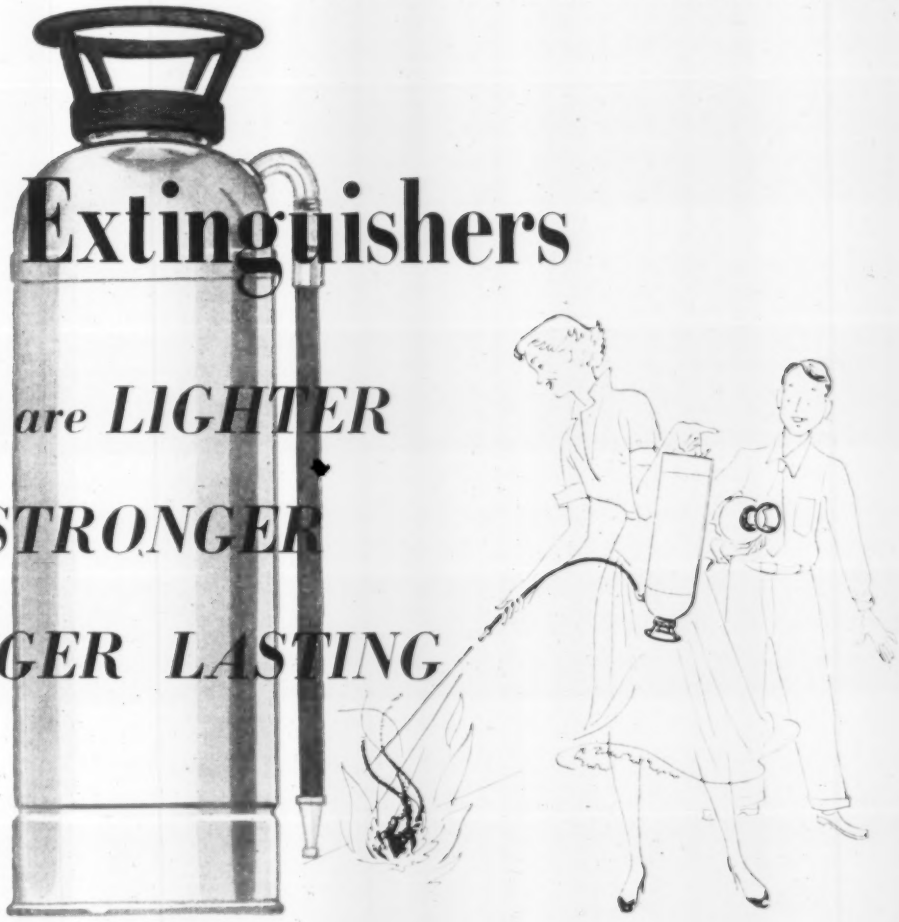

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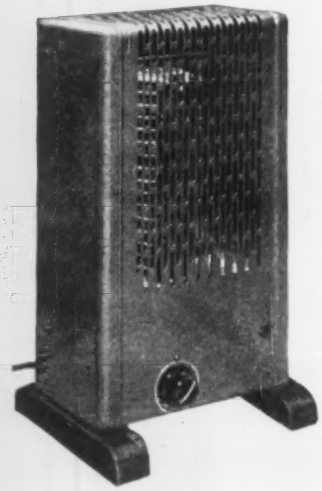

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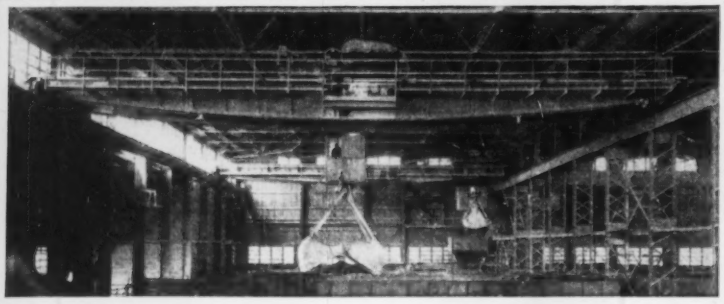

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Scrap . . .

Scrap Prices, Page 128

Pittsburgh—Since imposition of the price freeze on iron and steel scrap, the market in this district has been lifeless. Most dealers cleared their yards pretty well prior to the freeze, Feb. 7, and since have been accumulating tonnage. They are not pressing material on the market, however, in general waiting for resumption of active buying by the mills and seeking to apply the price regulations to best possible advantage. Several "bugs" in the government price regulations have come to light which the trade is hopeful of having removed.

Boston—Heavy melting steel supply is limited. Some consumers are operating below permitted inventory. Acquisition of tonnage is retarded by the small supply of No. 1 heavy melting at yards. Bundles are in a similar situation. No. 1 steel commands $34.17, shipping point here for delivery to most eastern Pennsylvania points, but in some freight areas the price is slightly lower.

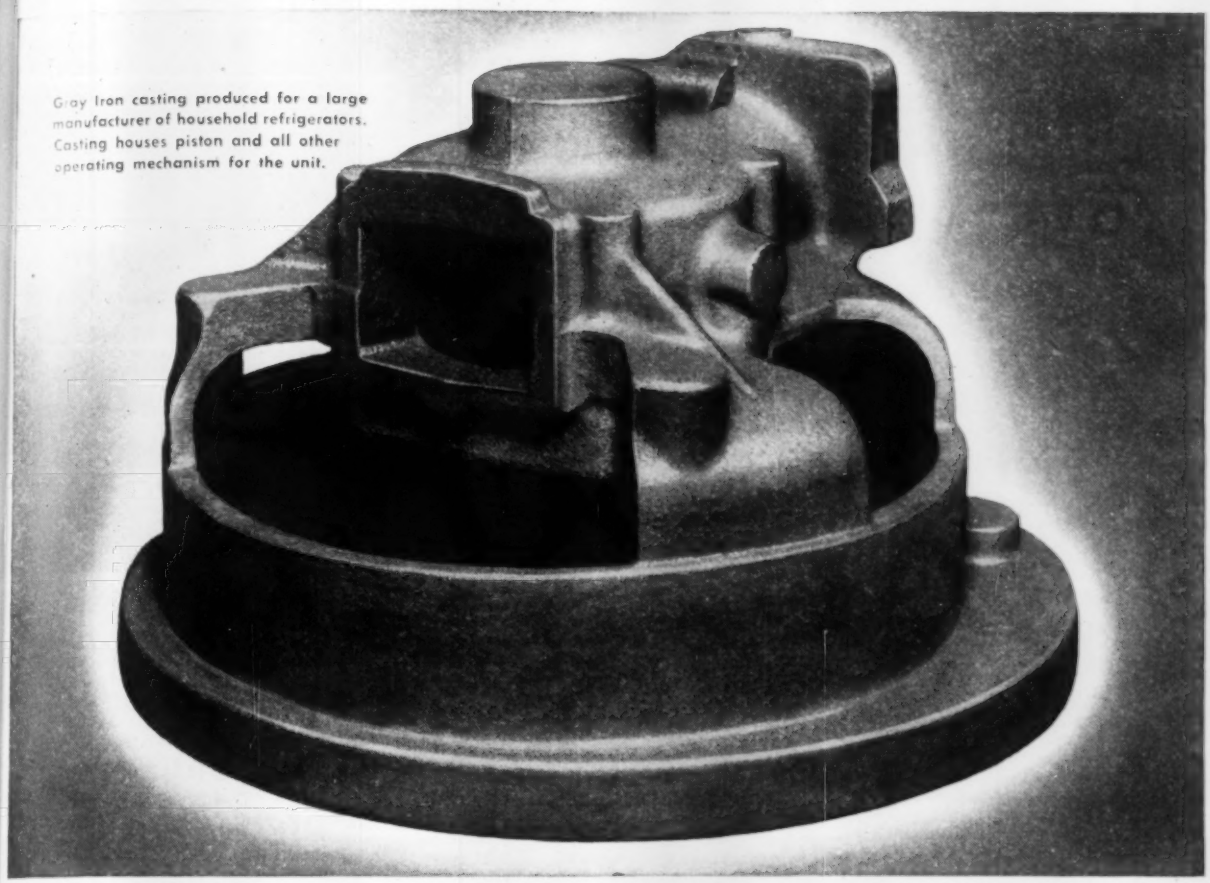
New York—Scrap brokers report demand is well in excess of supply. Most sellers anticipate little improvement much before spring and such as may develop before then may be due to heavier importations. At least more ships are expected to be available in March than for any month since the beginning of the year.

Chicago—Feeling is growing that a scrap shortage exists. Discounting unfavorable weather conditions, material is not being collected or appearing in the volume anticipated. Mills have reasonably good inventories and movement of industrial grades has improved since end of the railroad strike. However, flow of dealer scrap is sluggish. Such material as dealers take in is earmarked to complete old orders. Most serious at the moment is the dearth of cast scrap, an embarrassing situation for foundries which remained out of the market for weeks before the price rollback and freeze. With pig iron short of demand melters are forced to lean heavily on scrap and a good part of that now offered must be shipped from distant points at high freight cost.

Buffalo—New business is reported in cast grades at control levels, while dealers continue to ship against old contracts for steelmaking items. Receipts and collections improved slightly as the weather moderated but concern is still expressed over supplies. Mills are unable to maintain capacity production on current receipts. Dealers are still hoping for a downward revision in the 83-cent switching charge in effect under controls.

Philadelphia—Steel scrap shortage is pronounced. At least one large consumer of open-hearth scrap is buying foundry steel, 2 feet and under, to supplement No. 2 heavy melting steel requirements. He is paying what amounts to $4 per ton premium, as this grade is set up by OPS at $2 per ton above the base for No. 1 heavy melting which is $2 above the No. 2 heavy melting base. Some foundry steel, 1 foot and under, is being purchased at what amounts to a premium of $6 per ton.

Detroit—Only slight improvement



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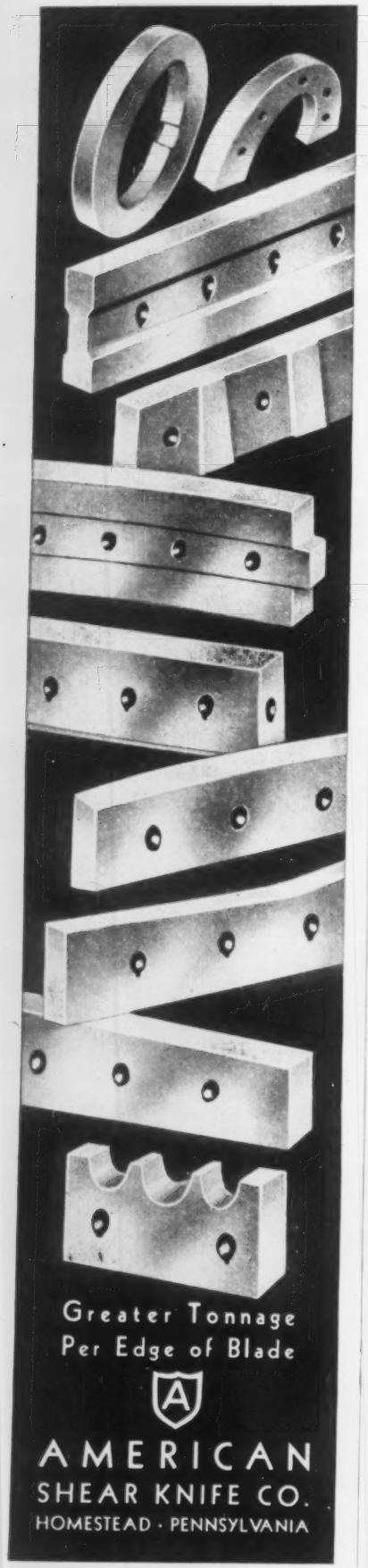


in scrap supply is noted. Replenishment of yard stocks is proceeding slowly. Mills are crying for supplies. Iron foundries are pressing hard for more material.

Cleveland—Revisions in the scrap price order will be made probably within 30 days, to eliminate many "bugs" contained in the original release. Brokers and dealers want revisions in the Department of Commerce specifications which do not conform fully to present day practice. Some interests claim there are too many grades and urge a lumping together of certain grades which would result in a change in some ceilings. Activity in the market is extremely slow, due in part to the direct allocation of substantial tonnages to mills from point of origin. Shortages at foundries are increasing.

Cincinnati—Shipments of iron and steel scrap are below normal, due in large part to stripping of yards prior to the price rollback. However, melters are fairly well supplied, but will accept tonnage as offered. Some foundries are actively in the market for best grades of cast which are in extremely light supply.

St. Louis—Scrap trade is slow, despite low consumer inventories. Biggest factor is bad weather which delays collection and preparation. Dealers are in no hurry to sell.

San Francisco — Ceiling prices, which actually proved a "roll-up" rather than a "rollback" in this area for most steelmaking grades, have brought a furrowed brow to steel producers, especially the smaller firms, as previously established maximum prices for semifinished and finished products have shut off any possible escape from the added costs. However, main worry is supplies.

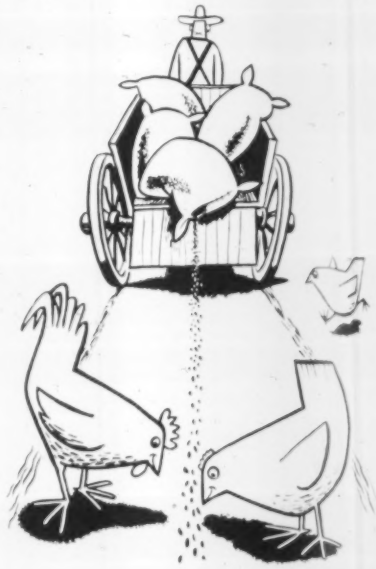
Seattle—Considerable confusion exists in the scrap market over interpretation of the price regulation. However, the situation is clearing, resulting in heavier shipments to mills.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 124

Pittsburgh—Merchant coke sellers are hoping for early decision by the economic stabilization authorities with respect to price policy. Coal prices have been raised to compensate for the increase in miners' wages. Oddly, however, no mention was made of coke in the government price regulations which leaves sellers in a quandary. Unless they are permitted to raise their prices they will have to absorb the increase in coal costs. Some sellers are not invoicing customers against current shipments pending settlement of the price question. Meanwhile, demand for coke continues pressing.

Chicago — Cokemakers report the tieup of freight cars caused by the recent railroad strike is breaking up in reasonably good shape and they are able to move out coke shipments to foundries on better schedule. Some days still will be required, however, to restore transportation to normal. A shortage of suitable cars exists aside from the log jam. Supply of foundry coke is short of melting requirements and the situation is eased in the worst spots by bringing in beehive coke from Pennsylvania.



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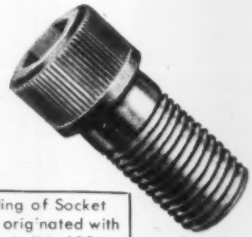

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Warehouse . . .

Warehouse Prices, Page 125

Philadelphia — Warehouses report February business holding at the January lead on a daily basis. This reflects inflow of mill tonnage at about the same rate as last month. Distributors could sell more if they had ample stocks.

Pittsburgh—Local distributors are struggling to keep pace with demand but they are steadily falling behind as stocks shrink and mill shipments continue disappointing. Tonnage is moved to customers almost as quickly as received from the mills. This is especially true of the more popular products, sheets and strip, plates and bars. DO-rated orders on the warehouses continue relatively small, for while this is an area of heavy equipment production, requirements for such are not under allocation. As a general thing the distributors are disappointed with NPA order M-6 which assures them position on mill order books after DO and other emergency needs are cared for. This assurance is better than nothing, say the warehousemen, but it has not materially contributed to replenishing stocks.

Cleveland—Warehouse order volume compares favorably with preceding months but sellers are having increasing difficulty filling customers' requirements as their stocks are steadily becoming more unbalanced. This is necessitating considerable shopping around by customers. However, so far as known, no plant shutdowns for lack of steel have been occasioned as yet. Some distributors report mill shipments are coming in steadily but tonnage is not up to expectations.

San Francisco—One large distributor reports most critical items as follows: Wide flange beams, brought in from the East, practically nonexistent; hot rolled sheets, 60 inches and wider (eastern size); plates, heavier than three inches; galvanized sheets, and cold finished bars and alloy bars (eastern items). Most readily available items are hot rolled bars of sizes produced locally. Total inventories of all items combined are half those three months ago.

Seattle—Warehouses' stocks are so low it is difficult to fill DO orders. Sheets and plates are practically unobtainable while other items are extremely scarce.

Alloy Steel . . .

Pittsburgh—Crucible Steel Co. of America last week announced two new crucible alloy steels which conserve scarce materials. Both are now available to the trade. Neither contains cobalt or columbium, and one contains less than 1 per cent nickel. The alloys find application where high strength is required at high temperatures. Uses include aircraft jet engine parts and high temperature industrial equipment.

The steels are of the stainless and heat-resisting types, being designated CSA 39 and Crucible 422. The former is an iron base alloy containing about 27 per cent nickel, 18 per cent chromium, 9 per cent moly and 3 per cent tungsten. Crucible 422 is also an iron base alloy with 13

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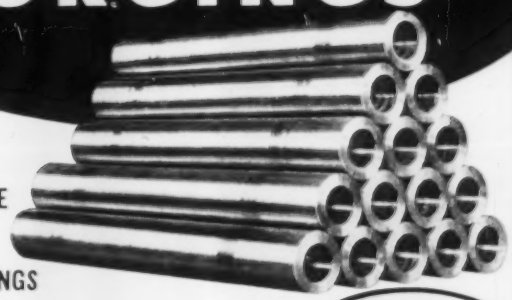

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per cent chromium, 1 per cent tungsten, 1 per cent moly, less than 1 per cent nickel and less than ½ per cent vanadium.

Iron Ore . . .

Iron Ore Prices, Page 125

Cleveland—Iron ore stockpiles are shrinking rapidly and will be at a dangerously low level before the lake shipping season opens this spring. Stocks totaled 30,227,130 tons at furnaces and on Lake Erie docks on Feb. 1 compared with 37,168,873 tons a month earlier and 32,003,928 tons on Feb. 1, 1950. This indicates there will be a shortage of certain grades if the season opens in late March; a general stringency if the opening is delayed until April, as it was last year. With 184 furnaces in blast and 10 idle on Jan. 1, consumption amounted to 7,326,968 tons in January. The average for the past four months is 7,226,000 tons.

Manganese Ore . . .

Washington—Defense Minerals Administration placed the delivery and use of manganese ores under allocation control. Emergency order MO-2 prohibits after Mar. 31 virtually all deliveries of manganese ore not covered by allocation authorizations to be issued by DMA. It also requires monthly reports of inventory and anticipated supplies. Deliveries which are exempted from the control order are those to the General Services Administration for stockpiling, those made for the purpose of resale, and those involving ore containing less than 35 per cent manganese on a dry basis. Consumers must apply for authorization for accepting delivery on DMA-Form 1 not later than the 15th of the preceding month. Anyone importing manganese ore and anyone buying domestic manganese ore for resale must report his purchases weekly to DMA. The first week for which such reports will be required is that of Mar. 4-10. Reports must be made Friday of the week after that in which ore was purchased.

Tungsten Ore . . .

Washington—Interim emergency order, MO-4, makes it mandatory for suppliers of tungsten concentrates to deliver to a consuming firm when the supplier has been instructed to do so by Defense Minerals Administration. The temporary measure will be superseded by longer-term plan for allocation of tungsten concentrates. Demand is such that several consuming firms have been unable to obtain sufficient quantities to meet demands for military and essential civilian requirements. Under this order, tungsten concentrates means all natural tungsten concentrates and all synthetic scheelite containing 40 per cent or more tungsten trioxide.

San Francisco—Shipment of approximately 30 tons of crude ore a day from the recently discovered Starbright tungsten deposit, 25 miles north of Barstow in San Bernardino county, is reported by the Department of Natural Resources, California. The deposit is being worked by the Minerals Materials Co., Alhambra, Calif.

Another development at Pine Creek in nearby Inyo county is the installation by Union Carbide & Carbon Corp. of a custom mill for tungsten ore.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

1200 tons, transmission towers, Fairless Works, Morrisville, Pa., to American Bridge Co., Pittsburgh.

1000 tons, new plant, Zenith Radio Corp., Chicago, to Ceco Steel Products Corp., Cicero, Ill.; Campbell-Lowrie-Lautermilch Corp., Chicago, contractor.

700 tons, power plant, Long Island Lighting Co., Far Rockaway, N. Y., to Harris Structural Steel Co., New York.

650 tons, factory building, Philco Co., Edgely, Pa., to Bethlehem Steel Co.

600 tons, power plant, Pennsylvania Water & Power Co., Holtwood, Pa., to Lehigh Structural Steel Co., Allentown, Pa.

530 tons, New York Central railroad bridge, Blackwell, Pa., to Bethlehem Steel Co.

500 tons or more, Terrell junior high school, Washington; structurals to Barber & Ross, that city, and bars to Bethlehem Steel Co. through John Tester & Sons, Washington, general contractor.

420 tons, boiler supports, Combustion Engineering-Superheater Inc., Trinidad, Tex., to Masher Steel Co., Houston, Tex.

290 tons, junior high school, Waterloo, Iowa, to Laclede Steel Co., St. Louis.

170 tons, state bridge, Cumberland county, Pennsylvania, to Bethlehem Steel Co.

119 tons, dial office, Illinois Bell Telephone Co., Arlington Heights, Ill., to Joseph T. Ryerson & Son Inc., Chicago; Dahl-Stedman Co., Chicago, contractor.

105 tons, Pennsylvania Railroad bridge, Eddington, Pa., to Bethlehem Steel Co.

100 tons, housing project, East Boston, Mass., to Quincy Ornamental Iron Works, Quincy, Mass.; M. S. Kelliher Co., Boston, general contractor.

100 tons, shapes and bars, school, East Windsor, Conn., to Berlin Construction Co., Berlin, Conn., and Scherer Steel Co., Hartford, Conn., through Wadhams & May, Hartford, general contractors.

STRUCTURAL STEEL PENDING

7500 tons, Charlestown section, single and double deck elevated highway, central artery, Boston; bids Mar. 20, Boston.

7000 tons, McNary dam spillway, powerhouse, etc.; bids to U. S. Engineer, Walla Walla, Wash., Apr. 5.

2000 tons, Meriden steel bridge, Boston; bids in April.

1500 tons, Ross dam power house; bids to Seattle deferred from Feb. 21 to Mar. 7.

411 tons, state bridge, Ocean county, New Jersey, bids Mar. 13.

200 tons, four sets stop logs and lifting beams, Detroit dam, Oregon; Schmitt Steel Co., Portland, Oreg., low $51,060, to U. S. Engineer.

200 tons, Coos river, Oregon state bridge; general contract to Tom Lillebo, Reedsport, Oreg., low $566,000.

Unstated, ordnance vehicle repair shop, Fort Richardson, Alaska; bids to U. S. Engineer, Seattle, Feb. 28.

REINFORCING BARS . . .

REINFORCING BARS PLACED

1600 tons, housing project, East Boston, Mass.; 1100 tons to Northern Steel, Inc., Boston, and 500 tons to Fabricated Steel Co., Boston; M. S. Kelliher Co., Boston, general contractor.

405 tons, expansion, Allegheny-Ludlum Steel Corp., Brackenridge, Pa., to United States Steel Supply Co., Chicago.

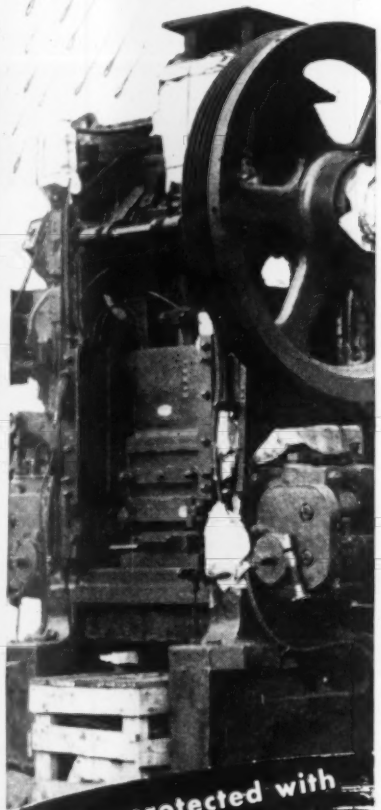
235 tons, easterly sewage treatment works, Altoona, Pa., to United States Steel Supply Co., Chicago.

REINFORCING BARS PENDING

35,000 tons, McNary dam, power house, spillway, abutments, etc.; bids to U. S. Engineer, Walla Walla, Wash., Apr. 5.

3750 tons, Ross dam powerhouse, Skagit proj-

MACHINES WON'T RUST OUTDOORS



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ect; bids to Seattle postponed from Feb. 21 to Mar. 7.

1500 tons, Farm Creek channel improvements, East Peoria, Ill., for U. S. Engineer; bids Mar. 1.

800 tons, addition, Rock Creek Arsenal, Denver; Utah Construction Co., that city, contractor.

600 tons, Continental Grain Co., Chicago; Ryan Construction Co., Omaha, Nebr., contractor.

295 tons, state bridge, Ocean county, New Jersey; bids Mar. 13.

270 tons, staff apartment building, University of Illinois, Medical Center, Chicago; new bids Mar. 5.

200 tons, Congress Street expressway drainage, Chicago; bids Feb. 20.

150 tons, expansion, Solar Aircraft Co., Des Moines, Iowa.

140 tons, residence hall for men, University of Illinois, Medical Center, Chicago; new bids Mar. 5.

116 tons, intern resident dormitory, University of Wisconsin, Madison, Wis.

100 tons, including shapes, Seward-Anchorage road, Alaska; bids to Bureau of Public Roads, Juneau, Alaska, Mar. 6.

700 tons, hotel, Lexington, Ky.

Unstated, automotive laboratory, Standard Oil Co. of Indiana, Whiting, Ind.

Unstated, residence unit, State Hospital, Manteno, Ill.; bids Feb. 27.

Unstated, Salvation Army Hospital, Chicago; bids Feb. 23.

Unstated, 294-foot overpass, 94-foot viaduct, Lane county, Oregon; also other highway structures in Hood river and Lincoln counties; bids to Oregon State highway commission, Portland, Feb. 26 and 27.

Unstated, addition to main library structure, Tacoma, Wash.; and MacDonald Building Co., Tacoma, low base, $1,072,309.

PLATES . . .

PLATES PLACED

170 tons, five tanks for New York Central railroad for various locations, to Bethlehem Steel Co.

PLATES PENDING

1000 tons, McNary dam unit; bids to U. S. Engineer, Walla Walla, Wash., Apr. 5.

Unstated, oil carrying barges; bids in to U. S. Navy from plants in Pacific Northwest, ranging from $63,000 to $95,526 apiece.

PIPE . . .

STEEL PIPE PLACED

375 tons, 36-inch steel pipe for Kellex Corp., New York, for Muscle Shoals, Ala., to Armco Steel Corp., Middletown, O.

CAST IRON PIPE PENDING

900 tons, assorted sizes for municipal use; bids in at Portland, Oreg.

300 tons, 8 inch; bids in at Seattle.

Unstated, 17,000 feet 8 to 4 inch, hydrants and accessories, also alternatives; bids to J. E. Law, city clerk, Port Angeles, Wash., Feb. 26.

RAILS, CARS . . .

RAILROAD CARS PLACED

Canadian National Railways, 2300 freight cars; 1500 gondolas to Eastern Car Co. Ltd., Sydney, N. S.; 500 hopper and 300 flat cars, to National Steel Car Corp., Hamilton, Ont.

Chicago & Eastern Illinois, 500 seventy-ton and 500 fifty-ton hopper cars, to Pressed Steel Car Co.'s Mt. Vernon, Ill., plant.

Lehigh Valley, 350 seventy-ton drop end gondolas, to the Bethlehem Steel Co.

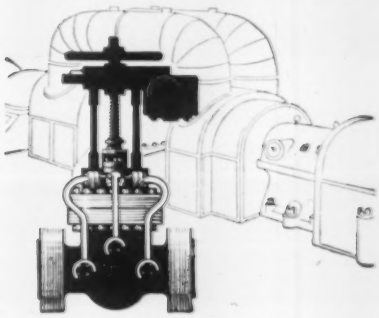
Pennsylvania-Reading Seashore Lines, six self-propelled rail diesel cars, to Budd Co., Philadelphia.

RAILROAD CARS PENDING

Southern Pacific, 7000 freight cars, comprising 5550 box, 1000 gondola and 500 hopper cars; program approved, with a portion of the cars to be built in the company's own shops.

RAILS PLACED

Atlantic Coast Line, 51,000 tons of rail, 38,000 tons going to Tennessee Coal Iron & Railroad Co., Birmingham, and 13,000 tons to Bethlehem Steel Co.



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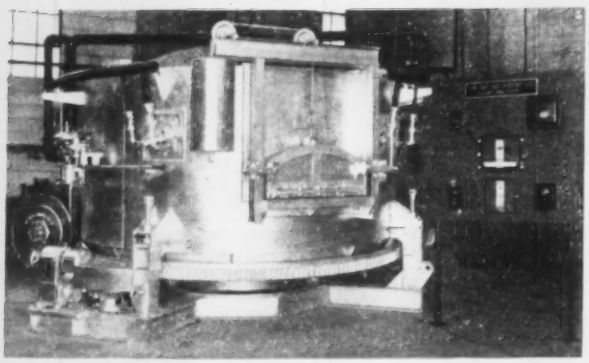

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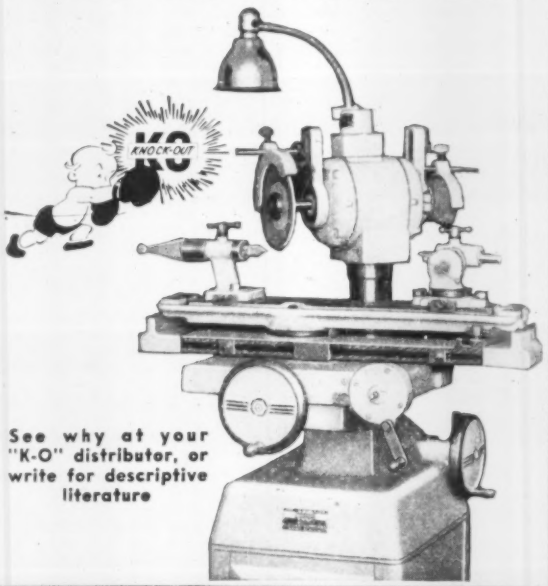

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Metalworking Briefs . . .

CONSTRUCTION—ENTERPRISE—ORGANIZATIONAL CHANGES

California

Stevens Tool-Die & Machine Co., Costa Mesa, Calif., soon will go on a three-shift basis. The concern, entering the field last August at 630 W. 17th St., that city, has already erected an additional building. Two additional structures will be completed by the end of April.

California

As part of an extensive development of its scheelite holdings, **Marston Enterprises,** Beverly Hills, Calif., will build a tungsten concentration plant in Spanish Canyon, Austin, Nev.

California

Given Mfg. Co., Los Angeles, is constructing a plant in Vernon, Calif. The company makes domestic and restaurant garbage disposers.

California

Eriez Mfg. Co., Erie, Pa., appointed C. D. Sutton Inc. as its representative in the Los Angeles area. Mr. Sutton will handle the complete Eriez line, including all permanent magnetic separation equipment of its own manufacture, Memco electromagnetic separation equipment and RCA electronic metal detectors.

New York

Precision Castings Co., Fayetteville, N. Y., will build part of a proposed $2.5 million plant this summer if the town zoning board will change its zoning ordinance.

Connecticut

Ready Tool Co., Bridgeport, Conn., appointed David R. Grossman Co., New York, as its metropolitan New York and export distributor for its machine tools.

Delaware

East Texas Steel Castings Co. Inc.—steel products—was chartered by the secretary of state's office, Dover, Del. Prentice-Hall Corporation Inc., Dover, is serving as the principal office.

Delaware

Savoy Steel Co.—machinists—filed a charter of incorporation with the secretary of state's office, Dover, Del. Corporation Guarantee & Trust Co., Wilmington, Del., is serving as the principal office.

Delaware

Microcylimat Corp.—machinery—filed a charter of incorporation with the secretary of state's office, Dover, Del. Capital of the firm is listed at $200,000. Corporation Trust Co., Wilmington, Del., is serving as the principal office.

Illinois

Conoflow Corp.—pneumatic control accessory equipment—Philadelphia, appointed J. R. Simpson & Co., Chicago, as its representative in Illinois, Indiana and Wisconsin.

Illinois

Republic Plating & Processing Co., Chicago, is completing conversion of its plant facilities to process aluminum through sulphuric and chromic acid anodizing.

Indiana

Vulcan Soot Blower Division, Du Bois, Pa., and Northern Equipment Division, Erie, Pa., of **Continental Foundry & Machine Co.,** E. Chicago, Ind., appointed Warriner Equipment Co., New Orleans, and Hawkins-Hamilton Co., Charlotte, N. C., as their sales representatives.

Louisiana

White Motor Co., Cleveland, opened a new factory branch building in New Orleans. James S. Rees is branch manager for White in New Orleans.

Maryland

Black & Decker Mfg. Co., Towson, Md.—portable electric tools—will build a branch plant at Hampstead, Md. Construction will begin in April; operation within a year.

Maryland

Continental Can Co. Inc., New York, is erecting an addition to its Baltimore warehouse.

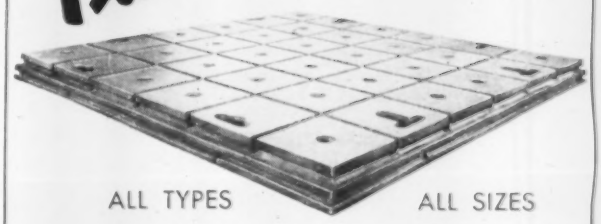
Maryland

General Automatic Products Corp., Baltimore—domestic heater equipment—plans to build a branch plant in that city. The company hopes to start construction this spring.

Michigan

Rolled Products Division, **Michigan Steel Casting Co.,** Detroit, will open a new warehouse building at 4815 Bellvue, that city, on Mar. 1. A complete line of rolled

Hyde Park FLOOR PLATES



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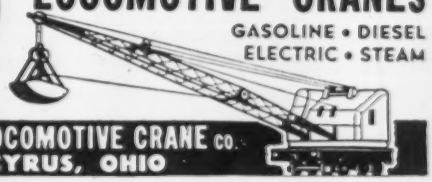

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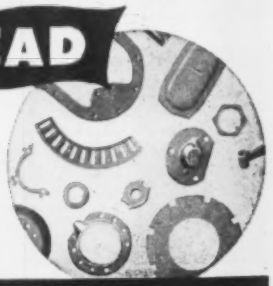

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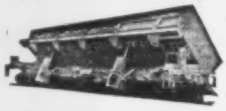
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P. M. Steel Products Co., subsidiary of A. S. Aloe Co., St. Louis, is building an addition to its plant in Brentwood, Mo., for the manufacture of hospital, laboratory and physicians and surgeons equipment. Estimated cost is $200,000.

New Jersey

Star-Kimble Motor Division, Miehle Printing Press Mfg. Co., Bloomfield, N. J., appointed Baldwin Co., Dallas, as its representative in Texas, New Mexico and Oklahoma.

New Hampshire

Sealol Corp., Providence, R. I.—mechanical seals for rotating shafts—organized a subsidiary company, Sealol Mfg. Co., to be located in Keene, N. H. Sealol production now includes a large amount of defense work.

New York

New Amsterdam Import Co., New York, is appointed exclusive American agent for **Pouplier Steel Mills,** Hagen-Kabel, Germany. Sales of Pouplier products are handled by an associate company, New Amsterdam Trading Corp., 122 Chambers St., New York, under management of G. H. Shindler. Products offered include: Cast and hammered steels, cold-rolled and cold-drawn steels, hardened steels and tool steels.

New York

Line Material Co., Milwaukee, plans to erect a $500,000 plant in Olean, N. Y., for production of protective electrical power distribution equipment.

New York

Carl Hirschmann Co. was organized as an affiliate of Hauser Machine Tool Co., Manhasset, N. Y. The former company becomes exclusive agent in this country of Ternos Works Ltd.; Schaublin, S. A.; Lambert, S. A.; Safag, S. A.; and Agathon Ltd., all Swiss precision tool manufacturers.

New York

Black & Decker Mfg. Co., portable electric tools—Towson, Md., opened a sales and service branch at 881 W. Delavan Ave., Buffalo.

Ohio

Cleveland Tapping Machine Co., subsidiary of Automatic Steel Products Inc., Canton, O., appointed Harrington-Wilson-Brown Co., New York, as exclusive dealers in metropolitan New York and northern New Jersey for its line of screw tapping machines.

Ohio

American Laundry Machinery Co., Cincinnati, bought the Valve Division of W. M. Chase Co., Detroit. The Chase valves and laundry equipment parts will be made at the Norwood, O., plant.

Pennsylvania

Rockwell Mfg. Co., Pittsburgh, will build new manufacturing facilities in that city. The company makes a wide range of products, including meters, regulators, valves, machine tools, presses, pumps, foundry molding equipment and other machinery.

Pennsylvania

Mackintosh-Hemphill Co., Pittsburgh—rolling mill machinery—is expanding its Midland, Pa., plant. Ground will be broken adjacent to the company's Midland steel foundry buildings in the near future.

Rhode Island

U. S. Gutta Percha Paint Co., Providence, R. I., has changed its name to **Barreled Sunlight Paint Co.** There is no change in management.

Texas

Automatic Transportation Co., Chicago, has appointed John Gilliam Equipment Co., Dallas, a sales representative for their electric industrial trucks.

Washington

Eagle Metals Co. has moved to a new plant at 4755 First Ave. S., Seattle.

Wisconsin

Massey-Harris Co., Racine, Wis., will build a plant in that city for production of tractors and farm implements. Estimated cost exceeds $1 million.

Canada

Noranda Mines Ltd., Toronto, will build a $4 million plant to produce sulphur and iron from pyrite ores. The plant will treat 300 tons of pyrite a day. Site for the plant has not been selected.

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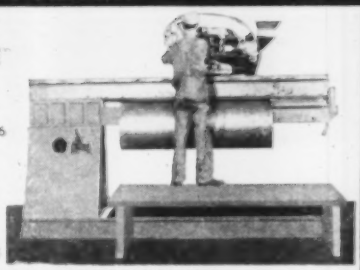

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